

## "Pioneering for a Civilized World:" Griffith Taylor and the Ecology of Geography

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# **“Pioneering for a Civilized World:” Griffith Taylor and the Ecology of Geography**

**Nancy J. Christie**

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## **Introduction<sup>1</sup>**

As the Second World War drew to a close, W.T. Easterbrook, an economist at the University of Manitoba, wrote to Harold Innis, then the chairman of the Department of Political Economy at the University of Toronto, and the figure most responsible for Griffith Taylor's appointment to the University of Toronto in 1936. Geography had been gravely misused by militant nationalists Easterbrook believed; and now both geography and the social sciences were being denigrated by empiricism. In his view: 'Taylor's desperate search for a single final answer is, I am sure, responsible for the dyspeptic expression which is habitually his. It is time that geographers were asked for more than geology and quantitative, non-interpretive treatment.' In short, Easterbrook concluded, it was incumbent upon geographers and social scientists to come out of their fox-holes and adopt a more humanistic and less objectivist interpretation of man's relationship to the natural world.

From 1920, when Griffith Taylor established Australia's first Department of Geography at the University of Sydney, to his sojourn at the University of Chicago (1928-1935), and until World War II, his life expressed a commitment to the idea that through geography the social sciences could achieve the goal of technocratic predicability and national efficiency. It was an ideology widely shared by an international community of scholars. Yet, it was not likely to bring to the social sciences in Canada the 'light in teaching and research' that Easterbrook had envisaged;<sup>2</sup> indeed, by the 1940s Taylor's brand of scientist was rapidly losing ground before a renaissance of the humanities at the University of Toronto.

- 1 The phrase 'Pioneering for a Civilized World' appears in a *Herald Tribune* Forum in 1943, at which Taylor spoke on 'Geography and National Planning'. 'Realm of Geography' appeared in Griffith Taylor, 'Geography and Australian National Problems,' Presidential Address, Section E, *Report of the Australasian Association for the Advancement of Science* (AAAS), XVI (1923), 439. N. M. Fenneman had conceived a similar figure in his 'The Circumference of Geography,' *Annals of the Association of American Geographers*, 9 (1919), 3-11, and Taylor's Diagram was later appropriated by A.K. Lobeck in 1939. See D. R. Stoddart, 'That Victorian Science: Huxley's Physiography and its Impact upon Geography,' *Transactions of the Institute of British Geographers*, 66 (1975), 29-30.
- 2 University of Toronto Archives [UTA], Harold Innis Papers, B75-0025, W.T. Easterbrook to Innis, 7 May 1945.

Geography was described by Taylor as 'the vital realm of thought' where science and philosophy converged.<sup>3</sup> But Taylor also believed that geography could focus the natural sciences upon the problems of human civilization in order to furnish empirical evidence for population planning in the future. Through geography, the moral and ethical preoccupations of the humanities would be conquered in the very arena in which they had failed. In the relationship between the natural and social sciences Griffith Taylor's career is particularly crucial. Here was a scholar trained in geology, physics, and palaeontology, whose perspective on the social sciences made no attempt to accommodate the 'pure sciences' to an idealist perspective of the humanities. As a human science, geography revolved, not around the twin poles of 'idealism and positivism, freedom and determination' – as Thomas Haskell has characterized the social sciences in America.<sup>4</sup> Taylor, bred within a positivist perspective, did not make the intellectual pilgrimage from moral reform to scientific objectivity.<sup>5</sup> What Taylor's career illustrates is that the social sci-

- 3 University of Toronto, Thomas Fisher Rare Book Library [UTL], Thomas Griffith Taylor Papers, MS. 20, Box 23, 'Correlations and Culture: A Study in Technique,' Presidential Address, Section E, *Report of the British Association for the Advancement of Science* [BAAS], 1928. Taylor also used the phrase 'the vital study of the age' in commenting on Isaiah Bowman's 'Pioneer Fringe' article. Australian National Library[ANL], Griffith Taylor Papers, 1003/4/363, Taylor to Bowman, 2 March 1928.
- 4 Thomas L. Haskell, *The Emergence of Professional Social Science* (Urbana: University of Illinois Press, 1977), 5.
- 5 Until recently American historians have placed the origin of the social sciences wholly within this procrustean dialectic, thus ignoring the important role played by the more extreme practitioners of objective social science, especially during the 1920s. This imbalance has been forcefully redressed by Robert Bannister who has argued for the centrality of the scientific movement in the social sciences during the decades after the First World War. Unfortunately this new interpretation has not fully recovered Griffith Taylor from the margins of intellectual endeavour because of the undue emphasis these historians have placed upon the social sciences as a unique product of American exceptionalism. See Robert C. Bannister, *Sociology and Scientism: The American Quest for Objectivity, 1880-1940* (Chapel Hill: University of North Carolina Press, 1987). Martin Bulmer likewise challenges the myth of a homogeneous Chicago School of Sociology by emphasizing the importance of quantitative sociology in the 1920's in *The Chicago School of Sociology: Institutionalization, Diversity, and the Rise of Sociological Research* (Chicago: University of Chicago Press, 1984). Although an otherwise excellent analysis of the social sciences, Dorothy Ross' *The Origins of American Social Science* (Cambridge: Cambridge University Press, 1991) is written within the framework of American exceptionalism.

The whiggish tendencies within American historiography on the social sciences have also insinuated themselves in Canadian monographs. See Marlene Shore, *The Science of Social Redemption: McGill, the Chicago School, and the Origins of Social Research in Canada* (Toronto: University of Toronto Press, 1987). Not only does Shore uncritically accept the scientists' own claims to professional status, but she affirms the linear argument of reformism to objectivity. Further, in a self-contradiction Shore argues that 'it is incorrect

ences need not emerge out of a reformist temper, nor were they built in Australia and Canada as the result of the manifest destiny of American universities and philanthropic foundations.

Taylor's scientific outlook was the product of his environment, formulated at the University of Sydney, expressing through geographical determinism his reaction to the arid Australian interior. This deterministic outlook in turn was applied to racial problems in his most important work on human ecology, *Environment and Race*, and featured as a principal theme in all his subsequent books and articles, even though by the 1930s, scholarly currents within the discipline of geography had shifted substantially towards an emphasis upon human culture as the central factor shaping social development. By the time Taylor founded the Department of Geography at the University of Toronto in 1935 his geographical ideas had become fixed so that his investigation of the problem of settlement in the Canadian North was simply the application of ideas previously worked out for the Australian environment.

## 1. The University of Sydney

Taylor's interest in the natural sciences began at an early age. His father, James Taylor, was a chemist who in 1893 became the government metallurgist of New South Wales. Despite firsts in New Testament Greek and Latin at King's School, Sydney, Taylor became a life-long opponent of classical education, and after a short stint in the humanities at the University of Sydney, he took gold medals in chemistry, physics, and physiography. Taylor came under the charismatic influence of T.W. (later Sir) Edgeworth David, Australia's foremost geologist, who directed him towards mining engineering and introduced him to physiography. This laid the groundwork for his career in geography.<sup>6</sup> In 1904 Taylor graduated from Sydney in physics and geology; in 1905 he took a Bachelor of Engineering degree.

to regard McGill sociology as an American import' and yet her analysis of Carl Dawson's sociological perspective is founded wholly upon the direct importation of Chicago sociology, and in particular, that of Robert Park.(xiv-xv) However, it is natural that the Canadian material was dominated by the American context, for Shore relies upon a research base of ten articles and four books written by Carl Dawson, who left no surviving personal or professional papers. For an excellent critique of the myth of objectivity and ideological consensus within Chicago sociology, see Henrika Kuklick, 'Boundary Maintenance in American Sociology: Limitations to Academic 'Professionalization,' *Journal of the History of the Behavioural Sciences*, 16 (1980): 201-219. To date, the best analysis of the social sciences in Canada is Doug Owsam, *The Government Generation: Canadian Intellectuals and the State, 1900-1945* (Toronto: University of Toronto Press, 1986).

6 Much of this summary of Taylor's life is derived from Taylor, *Journeyman Taylor* (London: Hale, 1958). See also George Strong Tomkins, 'Griffith Taylor and Canadian Geography' (Unpublished Ph.D. dissertation, University of Washington, 1966).

While teaching commercial geography at Sydney in 1907, Taylor's interest in the fossils of the Lower Cambrian period won him an 1851 Exhibition Scholarship to Emmanuel College, Cambridge.<sup>7</sup> There, bored by detailed paleontological laboratory work, he met eminent British geologists, including Robert Scott, who recruited him as Senior Geologist on the ill-fated British Antarctic Expedition of 1910-12. The expedition won him a doctorate in science from Sydney University in 1916, and the tragedy of the enterprise garnered him an international reputation. Despite winning the Royal Geographical Society's prestigious medal for exploration in 1913, Taylor was for many years restricted to pursuing his geographical research within the confines of the Commonwealth Weather Service. At last, in 1920, he was appointed the founding Associate Professor of Geography at Sydney University.<sup>8</sup>

A prodigious researcher and indefatigable teacher, Taylor's views on the limitations of settlement in Australia's interior – called the 'Dead Heart' by the geologist J.W. Gregory – and his opposition to the White Australia policy, invited a storm of public abuse. In a University known for purging academic dissidents, Taylor read the writing on the wall. Turning down invitations from Isaiah Bowman to join the American Geographical Society, and from Ellsworth Huntington to come to Yale,<sup>9</sup> in 1928, he moved to the University of Chicago, the most prestigious geography department in North America. Disliking the 'urban laboratory' so prized by the Chicago sociologists, Taylor departed for Toronto, where he grew a garden and founded a second Department of Geography, this time in his own image. Taylor was a self-professed Fabian socialist, pacifist, and philistine who favoured women's suffrage, hated drink, the classics, opera, 'Catholic' religious art, jazz, modern art, and cricket, and boasted of being the only geographer to have travelled to all seven continents.<sup>10</sup>

- 7 Sydney University Archives [SUA], 'Biographical Files: Griffith Taylor,' ANL, Griffith Taylor Papers, 1003/1/65, Douglas Mawson to Taylor, 19 March 1906; 1003/4/127/64C Edgeworth David to Griffith Taylor, telegram 8 June 1920, informing him of the offer of a chair at Sydney University; UTL, Griffith Taylor Papers, Box 21, 'The Geographer's Aid in Nation-Planning,' Presidential Address, *Report of the BAAS* (September 1931).
- 8 J. M. Powell, 'National Identity and the Gifted Immigrant: A Note on T. Griffith Taylor, 1880-1963,' *Journal of Intercultural Studies*, 2 (1981), 45-46.
- 9 ANL, Griffith Taylor Papers, 1003/4/127/89C2, Taylor to Doris, 1 June 1920. Isaiah Bowman of the American Geographical Society wished to secure Taylor to help him with his South American research. Taylor in turn used Bowman's offer to secure his University of Sydney McCaughey Chair in Geography. For Huntington's desire to build a Department of Geography around Griffith Taylor and Stephen S. Visher because of their renown in research, see Geoffrey J. Martin, *Ellsworth Huntington: His Life and Thought* (Hamden, Conn.: Archon Books, 1973), 161.
- 10 Taylor, *Journeyman Taylor*, 110. For Harold Innis' personality, see Carl Berger, *The Writing of Canadian History: Aspects of English-Canadian Historical Writing 1900-1970* (Toronto: Oxford University Press, 1976), 87-89.

As an iconoclast, inveterate traveller and obsessive researcher, Taylor surpassed even Harold Innis.

Roy MacLeod has described the period 1888-1913 as the 'heroic phase' in the development of Australian science. During these years, scientific institutions in Australia became more systematic and science was slowly turning its focus towards colonial purposes. Yet its loyalties remained divided, for while federal networks of science were established and British intellectual leadership became more equally shared with her colonial savants, many Australian scientists continued to seek recognition in the metropolis.<sup>11</sup> Studying at both Sydney and Cambridge, Taylor's education reflected the changing relationship between British and colonial science occurring at the time. It is of particular significance that he studied with Edgeworth David, who, more than any other, represented the growing maturity and independent spirit of Australian science. Appointed to the professorship of geology at Sydney University in 1891 and affectionately called 'the Prof' by his students, David's extensive and original geological work – especially his theory that glaciation in Australia had preceded the Pleistocene era – freed his discipline from British overlordship.<sup>12</sup> Moreover, by successful empirical tests at Funafuti David had confirmed Darwin's theory of coral atolls, and raised the prestige of colonial science.<sup>13</sup>

From David, Taylor learned that colonial scientists need not be merely fact-gatherers for metropolitan theorists, but could also function at the forefront of scientific synthesis. Taylor's geographical theories were shaped by David's pathbreaking research on glaciology, and his beliefs in the intractability of Australia's deserts, the impact of Antarctic weather patterns upon Australian settlement, and his commitment to Darwinian evolution, and particularly his admiration for Ernst Haeckel's theories of parallelism and ontogeny and his belief in the unity of mankind. Even David's view of artesian bores later found their way in one form or another into Taylor's many articles and books. David's holistic concept of physiography as a broadly encompassing form of nature-

- 11 See Roy MacLeod, 'On Visiting the "Moving Metropolis": Reflections on the Architecture of Imperial Science,' in Nathan Reingold and Mark Rothenberg (eds), *Scientific Colonialism: A Cross-Cultural Compariso* (Washington, DC: Smithsonian Institution Press, 1987), 242; Roy MacLeod (ed.), *The Commonwealth of Science: ANZAAS and the Scientific Enterprise in Australasia, 1888-1988* (Melbourne: Oxford University Press, 1988), 8-9.
- 12 T.G. Vallance and D.F. Branagan, 'Sir Edgeworth David,' *Australian Dictionary of Biography* 8.(1981), 218-21; Vallance and Branagan, 'The Earth Sciences: Searching for Geological Order,' in MacLeod, ed., *Commonwealth of Science*, 136; SUA, Griffith Taylor Papers, Acc. No. 979, series 1, item 1, 'Lecture Notes on Physiography.'
- 13 Roy MacLeod, 'Imperial Reflections on the Southern Seas: The Funafuti Expeditions, 1896-1904,' in Roy MacLeod and Phillip Rehbock (ed.), *'Nature in its Greatest Extent': Western Science in the Pacific* (Honolulu: University of Hawaii Press, 1988), 164-65.

study – what he called the ‘mapping of nature’<sup>14</sup> – took as its focus the reciprocal relationship between the environment and its plant and animal life, and provided an intellectual context for Taylor’s work in human ecology.

Cambridge vastly expanded Taylor’s scientific horizons, allowing him to associate with the ‘greats’ of British geology. There, Taylor, the ambitious colonial, basked in the intellectual ferment of Britain’s scientific societies. At the 1908 Congress of the British Association for the Advancement of Science in Dublin, he espied the neo-Darwinist August Weismann, and was ‘amazed’ to spot W.J. Sollas, professor of geology at Oxford, whom he had ‘worshipped him from afar’ and ‘drunk in his words of wisdom’ on glacial debris.<sup>15</sup> A year later, at the Darwin Centenary Reception in the Fitzwilliam Museum, Taylor spoke to Sollas, who later that year became his guest at St. John’s College, and lectured on ‘The Evolution of Europe.’<sup>16</sup> Eventually they exchanged Cambrian fossil specimens.<sup>17</sup> The same year, at the Royal Geographical Society, where Taylor had recently been elected a fellow, he met many senior British geologists.<sup>18</sup> With his supervisor, Professor T.G. Bonney, he discussed the Scottish Cambrian with Sir Archibald Geikie, Professor of Geology at Edinburgh.<sup>19</sup> At Cambridge, J.E. Marr, Professor of Geology, taught him geomorphology and A.C. Haddon, ethnology. His Cambridge experience confirmed his conviction that science was the principal source of authority in the modern world – an optimistic world of infinite possibilities unleashed by scientific expertise. Contemplating in 1909 the newly discovered laws of Gregor Mendel, Taylor believed that ‘Science would work wonders in 100 years.’<sup>20</sup>

At Cambridge, Taylor undertook research on the *Archeocyathinae* fossil coral from the Lower Cambrian, to which he had been first directed by Edgeworth David, when in 1904 he led a field-trip to the Flinders Ranges in South Australia. *Archeocyathinae* had been first discovered along the north shore of Belle Isle in Canada by Elkanah Billings of the Geological Survey of Canada who classified it among the porifera or extinct sponges.<sup>21</sup> Later, Sir William Dawson, Principal of McGill University, believed it was related to his own *Eozoon Canadense*,<sup>22</sup> while others argued that it was a form of algae. Indeed,

14 SUA, Griffith Taylor Papers, ‘Lecture Notes on Physiography.’

15 ANL, Griffith Taylor Papers, 1003/1/74, Taylor to Mater, 4 September 1908.

16 ANL, Griffith Taylor Papers, 1003/1/4 Taylor to Mater, n.d.; 1003/1/40–45, Taylor to Dad, 14 May 1909.

17 ANL, Griffith Taylor Papers, W.J. Sollas to Taylor, 14 June 1909.

18 ANL, Griffith Taylor Papers, 1003/1/40–45, Taylor to Dad, 14 May 1909.

19 ANL, Griffith Taylor Papers, 1003/1/158, Professor Bonney to Taylor, 5 December 1907.

20 ANL, Griffith Taylor Papers, 1003/1/40–45, Taylor to Mick, 27 January 1909.

21 C. Billings, *Palaeozoic Fossils, Silurian Rocks, 1861–65* (Montreal: Dawson, 1865), I: 5.

22 For the scientific background for these fossils, see Griffith Taylor, ‘Preliminary Note on

this fossil remains a puzzle even today, for although they were reef-forming like coral, its other structures suggest a close relationship with the sponges.<sup>23</sup> Today it occupies its own genus and Taylor was the first to reach such a conclusion. Thus he was not exaggerating when he stated in 1908 that he had discovered a new genus which was a new contribution 'to the phylogeny of the marine Invertebrates,' and that he had shown that the very origins of life must be pushed back from the Mesozoic to the lower Cambrian.<sup>24</sup>

From 1875 onwards, there had been a reawakening of interest among British geologists in the problem of definitively dating geological time, and thus under the leadership of Sir Andrew Ramsay, Director-General of the Geological Surveys of the United Kingdom, and Thomas G. Bonney, Professor of Geology at University College, London, new research in the earth sciences focussed upon the Lower Cambrian and Pre-Cambrian rocks and fossils.<sup>25</sup> Their lead was profitably followed in Australia where there existed some of the finest Cambrian fossil specimens in the world. By 1906, Taylor's good friend from the geology department at the University of Adelaide, Douglas Mawson,<sup>26</sup> began sending him limestone specimens of *Archeocyathinae*, with the warning that he proceed with the study of them only on the condition that his researches be published in South Australian scientific journals. Ostensibly these fossils were the scientific turf of Walter Howchin, lecturer in geology at Adelaide.

When Taylor, who always had his eye on possible avenues of professional advancement, proceeded to publish a memoir on the fossils with the Linnean Society of New South Wales in order to win a scholarship, Mawson, who had himself looked forward to claiming the scientific discovery for the State of South Australia, wrote accusingly to Taylor on 30 May 1906 that he had 'practically pirated from them a fine piece of work which they reasonably hoped to have embalmed in their Royal Society memoirs.'<sup>27</sup> Because of

*Archeocyathinae* from the Cambrian Coral Reefs of South Australia,' *Report of the Australian Association for the Advancement of Science* (AAAS), 11 (1907), 423-37.

- 23 For a discussion of this still problematical group of fossils, see Stephen Jay Gould, *Wonderful Life: The Burgess Shale and the Nature of History* (New York: W.W. Norton and Co., 1989), 314-15.
- 24 SUA, ACC. 979, Group 163, series 1, item 3, 'Working Notes at the Sedgewick Museum, Cambridge, as 1851 Exhibition Science Research Scholar,' 1908.
- 25 Beryl M. Hamilton, 'British Geologists' Changing Perceptions of Pre-Cambrian Time in the Nineteenth Century,' *Earth Sciences History*, 8 (1989), 146-47.
- 26 Douglas Mawson is probably best known for his participation in the British Antarctic Expedition in 1907-09 led by Ernest Shackleton in which the South Magnetic Pole was discovered by his mentor Edgeworth David, and for leading the Australian Antarctic Expeditions. However, he was also responsible for quietly building up the Department of Geology at the University of Adelaide.
- 27 ANL, Griffith Taylor Papers, 1003/1/46-69, Douglas Mawson to Taylor, 28 September 1905; 1003/1/60 Mawson to Taylor, 30 May 1906.



strength of the now well-entrenched state scientific organizations, Mawson predicted that such chicanery would be the ruin of Taylor's scientific career in Australia. However, Howchin's protestations that this publication would 'make your reputation throughout the scientific world' was the more accurate,<sup>28</sup> for in 1907 Taylor won a prestigious 1851 Exhibition Scholarship which enabled him to continue his paleontological investigations at Cambridge.<sup>29</sup>

So important was Taylor's pathbreaking investigations that they came to the attention of the foremost palaeontologist in the United States and the head of the Smithsonian Institution, Charles Doolittle Walcott. A mere month before he himself was to make scientific history by discovering the now famous Burgess Shale in British Columbia, Walcott was particularly drawn to Taylor's fossils which, at that time, were some of the first tangible evidence of the uniquely preserved soft-bodied organisms which represented the ancient explosion of life on earth during the Lower Cambrian period when all the modern groups of animals made their appearance. Walcott's request for Taylor's collection for the Smithsonian Institution and his observation that 'Your memoir will long be a classical one on the subject,'<sup>30</sup> was his first scientific recognition beyond the traditionally dominant British network, and thus represented, for Taylor, the growing importance of American scientific leadership.

Ironically, it was while at Cambridge that Taylor was pulled towards the American scientific orbit. This was largely due to William Morris Davis, professor of physical geography at Harvard. Following the publication of James Geikie's *The Great Ice Age* in 1874, the effect of the ice age upon geological evolution had become a focus for debate. Geikie argued against a single ice age, and in favour of four major periods of glaciation separated by

28 ANL, Griffith Taylor Papers, 1003/1/60 Mawson to Taylor, 30 May 1906.

29 These scholarships were established in 1894 to promote 'the knowledge of science and art and their application in productive industry.' They encouraged students within the Empire to undertake pure research, without necessarily earning a degree. They were instrumental in the careers of many notable colonial scientists. For example, Thomas Howell Laby, later Professor of Natural Philosophy at Melbourne, won a scholarship to work at the Cavendish Laboratory, where probably the most famous 1851 Exhibition award holder, Ernest Rutherford, had previously studied. See I.W. Wark, '1851 Science Research Scholarship Awards to Australians,' *Records of the Australian Academy of Science*, 3 (1975), 47-50; R.W. Home, 'The Beginnings of an Australian Physics Community,' in Reingold and Rothenberg (eds), *Scientific Colonialism*, 12-13, 16.

30 ANL, Griffith Taylor Papers, 1003/1/71, Charles Walcott to Taylor, 9 July 1909. Taylor also received praise from the Emeritus Professor of Geology at Cambridge, T.G. Bonney, who wrote that his research into 'the structure and relations of these anomalous and very ancient organisms will secure him a high place among Palaeontologists,' ANL, Griffith Taylor Papers, 15 March 1910. However, this did not engender the same excitement as Walcott's comments.

milder interglacial periods, reaching into the human period.<sup>31</sup> By the 1900s the debate had become more specialized, and physiographers, including Davis debated whether ice or water was the mechanism of glacial erosion. According to Taylor, speaking at the 1908 meeting of the BAAS, Davis had 'succeeded in converting all English geologists' to his view.<sup>32</sup> On a field trip to Mount Kosciuszko with Edgeworth David, Taylor had studied the impact of glaciation upon modern landforms in Australia, and in 1908 he accompanied Davis on a similar field trip to the Alps.<sup>33</sup> This practical experience of glacial development, under the expert tutelage of Davis, was decisive, for it secured him the position as senior geologist on Scott's Antarctic Expedition. There, in Taylor's own words, he could study an 'Ice Age in being.'<sup>34</sup>

Davis provided Taylor with detailed instructions on glaciation in the Antarctic – telling him, for example, not to assume cold as the normal climate of the region, and instructing him in tests for terrestrial and marine deposits. Davis also gave him a new intellectual orientation. Congratulating Taylor on his appointment to Scott's Antarctic Expedition, Davis warned him against the narrow fact-finding of Baconian science. The modern physiographer, he said, could understand the mysteries of successions of landforms only if his mind was awakened by 'deductive imagination.'<sup>35</sup> Davis' praise of theoretical sophistication dovetailed with Taylor's impatience with the empty empiricism of modern laboratory science. Moreover, Davis' Darwinian perspective pushed Taylor further towards accepting evolutionism as the central framework for the study of human civilizations.

Davis was among the first American geographers to overtly apply Darwinian biological principles to the study of landforms. Geological formations could be studied in terms of life-history, in which formations passed through stages of birth, youth, adolescence, and decline like an individual plant or animal. Davis' 'topographic cycle' was a combination of James Hutton's cyclical concept of geological time, and uniformitarian views of linear progression.

31 James Geikie, *The Great Ice Age and Its Relation to the Antiquity of Man* (New York: D. Appleton, 1874); Peter J. Bowler, *Theories of Evolution: A Century of Debate, 1844-1944* (Baltimore: Johns Hopkins University Press, 1986), 23.

32 ANL, Griffith Taylor Papers, Taylor to Jeff, 9 September 1908.

33 UTL, Griffith Taylor Papers, Box 21, 'The Geographer's Aid in Nation-Planning,' Presidential Address, BAAS, September 1931, 4. There are a whole cache of letters from Taylor to his family describing in detail the topography of Switzerland, and it is here that Taylor began his life-long belief in Switzerland was the ideal nation-state.

34 Griffith Taylor, *Our Evolving Civilization* (Toronto: University of Toronto Press, 1946), viii. In Antarctica, Taylor concluded that frost was the eroding agent, and thus reached a conclusion between Davis' ice and Professor Bonney's water theories. SUA, Griffith Taylor Papers, Acc. 979, series 4, item 3, 'With Scott: The Silver Lining,' n.p.

35 ANL, Griffith Taylor Papers, 1003, series I, files 1-4, W.M. Davis to Taylor, 19 March 1910.

Davis was also influenced by Darwin's biogeographical studies which focussed attention upon an organism's response or adaptation to a specific environment. Traditionally geography had been merely the study of physiography, but under the impact of Darwin, who had made man part of the natural world and thus an organism like plants and animals which was fit for scientific investigation, Davis developed the concept of 'physiographic ontogeny,' in which the behaviour and evolution of an organism must be studied as a response to its environment.<sup>36</sup> Just as plant and animal geographers had built upon Ernst Haeckel's holistic concept of nature as the interrelationship of all living things, Davis applied this science of ecology to man's interaction with his environment. And like Darwin and Haeckel, Davis wanted to overcome the dualism between man and nature implicit in older geographical studies, including those by his mentor Nathaniel Shaler, and at the same time ensured the scientific rigour of geography by making physiography (and climate) a causal role in human civilization.<sup>37</sup>

These new geographical concepts were very quickly assimilated into Taylor's own research. While in the Antarctic he described plankton's 'struggle for existence' and observed the 'cycle of life' evident in pack-ice giving Davis' concept his own individual twist by comparing it with the Indian idea of transmigration. After reading Davis' 'The Alps in the Glacial Period' while wintering at Cape Evans, Taylor was convinced that it was his duty to apply the 'sequence of changes' through 'youth and maturity to old age' to Antarctic landforms. And by 1911 he concluded that he would weld his Antarctic research data into 'a comprehensive theory on the line of Evolution.'<sup>38</sup>

Returning from the Antarctic, Taylor gave a series of purely geological lectures on the glaciology of the Antarctic with Edgeworth David, Frank Debenham (his sledge-mate), Albrecht Penck, and W.M. Davis to the famous meeting of

36 Richard Hartshorne, 'William Morris Davis - The Course of Development of His Concept of Geography,' in Brian W. Blouet, ed., *The Origins of Academic Geography in the United States* (Hamden, Conn.: Archon Books, 1981), 76-78, 142-144; Cecil J. Scheer, 'Geology, Time and History,' *Earth Sciences History*, 8 (1989): 103-105; Marvin W. Mikesell, 'Continuity and Change,' in Blouet, *The Origins of Academic Geography*, 220. For Davis and the 'topographic cycle,' see Griffith Taylor, *Australia: A Study of Warm Climates and Their Effect Upon British Settlement* (London: Methuen, 1940), 12. For a discussion of the wider acceptance of a cyclical view of evolution, see Nancy J. Christie, 'The Cosmology of New Societies' (Unpublished Ph.D. dissertation, University of Sydney, 1987).

37 For Davis' ecological perspective, see D.R. Stoddart, *On Geography and Its History* (Oxford: Oxford University Press, 1986), 159, 163, 167; Stoddart, 'Darwin's Influence on the Development of Geography in the United States, 1859-1914,' in Blouet (ed.), *Academic Geography in the United States*, 272.

38 UTL, Griffith Taylor Papers, Box 21, *Antarctic Adventure*, 11, 75, 85, 126; SUA, Griffith Taylor Papers, 979, 163, series 4, item 3, 'With Scott: The Silver Lining,' unpaginated; *ibid.*, series 3 i: 1, 'Notebook: Cape Evans, May 1911,' *ibid.*, series 3, item 2, 'Antarctic Sledge Diary, 1911-12,' 106.

the British Association for the Advancement of Science held in Sydney at the outbreak of war in 1914. However, like many other young geographers who desired to wrest their discipline from its association with amateur exploration and landscape description, Taylor usurped the most aspect of geology – the study of physiography (the term coined by Huxley in 1877) – and made it the centrepiece of the 'New Geography.'<sup>39</sup>

Taylor believed that geography would 'come to a natural end'<sup>40</sup> if it did not move beyond exploration and description to become a science of causality. This new 'scientific' emphasis upon the causal role of the physical environment, combined with a Darwinian insistence upon the adjustment of organisms to their environment, meant that geography, made a transition from physiography to human geography, and demonstrated the deterministic role of nature – what Taylor called 'environmental control.' The works of the American environmental determinists, Davis, Ellsworth Huntington, and Ellen Semple all appealed to him and, although he later distanced himself from Friedrich Ratzel's theories because of their dubious connection with *Lebensraum*, Taylor agreed with his views of the indivisibility of people and land.<sup>41</sup> However, Taylor most directly placed his geographical perspective within the older tradition of Alexander von Humboldt. Writing within the German Romantic scientific perspective, Humboldt envisaged the geographic world as an organic whole, in which the living and non-living were joined harmoniously within

39 For a discussion in Britain of the conflict between geologists and geographers over who should control the physiographical domain, see Stoddart, *On Geography and Its History*, 70-74. See his more detailed discussion in 'The Royal Geographical Society and the 'New Geography': Changing Aims and Changing Roles in Nineteenth Century Science,' *The Geographical Journal*, 146 (July 1980): 190-202. Sir Halford Mackinder was the British geographer most responsible making geography a more scientific subject by championing physical geography. See W.H. Parker, *Mackinder: Geography as an Aid to Statecraft* (Oxford: Oxford University Press, 1982). For Thomas Huxley's definition of physiography, see D. R. Stoddart, 'That Victorian Science: Huxley's Physiography and its Impact Upon Geography,' *Transactions of the Institute of British Geographers*, 66 (1975), 27. By far the best analysis of Victorian geography and its role in imperial expansion is Robert A. Stafford, *Scientist of Empire: Sir Roderick Murchison, Scientific Exploration and Victorian Imperialism* (Cambridge: Cambridge University Press, 1989). Stafford's analysis of the Royal Geographical Society reveals the difficulties faced by 'professional' geographers in transforming Victorian geography into a rigorous scientific discipline.

40 UTL, Griffith Taylor Papers, MS 20, Box 23, 'Parallels in Soviet and Canadian Settlement,' *International Journal*, 1 (February 1946), 6.

41 For a list of Taylor's geographical library, see ANL, Griffith Taylor Papers, 1003/9 Box 5, Taylor to George Tatham, 20 March 1951; SUA, Sir Edgeworth David Papers, 1/24, series 32, box 43, Taylor to David, 8 October 1912, in which Taylor notes influence of Ellen Semple and Sir William Herbertson. At the University of Sydney, Taylor's students read W.M. Davis, Ellsworth Huntington, and Friedrich Ratzel, *Calendar of the University of Sydney for the Year 1928* (Sydney, Angus and Robertson, 1928); Taylor, *Our Evolving Civilization*, 138. For Ratzel's theories, see Stoddart, *On Geography*, 237.

nature. Humboldt was also the first geographer who gave prominence to the geographical distribution of plants, animals, and mankind and, more important for Taylor – now a geographer with the Commonwealth Weather Service – Humboldt originated the concept of isothermic lines and was the first to include climate as a factor in natural history.<sup>42</sup>

Taylor first broached the idea that Australia's settlement was to be ultimately controlled by nature and geography in a volume on geographical regions of the world written for A.J. Herbertson, professor of geography at Oxford, who had coined the concept of 'natural regions'.<sup>43</sup> Although the environmentalist perspective was very much at the forefront of geographical research prior to World War I, Taylor's forceful denunciation of the possibilist school of geographical thought which emanated largely out of the French historical school and stressed human choice in dictating human settlement patterns,<sup>44</sup> was very much a product of his empirical observations within Australia. Working as a geographer with the Commonwealth Weather Service, Taylor invented the hythergraph<sup>45</sup> which for the first time enabled climatologists to correlate temperature with rainfall. As a result, Taylor concluded that the future settlement of Australia would be severely circumscribed by the 'dominating climatic control' of the Trade Winds which constantly sucked moisture from the interior.<sup>46</sup>

Although the idea that most of the interior of Australia was a desert was first advanced by J.W. Gregory, in *The Dead Heart of Australia* (1906), this did little to challenge Australia's national vision. In 1923, against the federal government's optimistic vision of establishing an agricultural yeomanry of

42 Margaret Bowen, *Empiricism and Geographical Thought: From Francis Bacon to Alexander von Humboldt* (Cambridge: Cambridge University Press, 1981), 213-232. Humboldt was particularly influential upon later plant and animal geographers who, like Griffith Taylor, endeavoured to correlate climate with vegetation zones. See Donald Worster, *Nature's Economy: A History of Ecological Ideas* (Cambridge: Cambridge University Press, 1977), 195.

43 The volume was entitled *A Geography of Australasia* (Oxford: Oxford University Press, 1914). While writing the volume at Cambridge, Herbertson offered him much geographical advice during this period, and his concept of 'natural regions' was particularly influential upon Taylor's interpretation of regions within Australia and the world.

44 For the origins of the French possibilist school of geography, see William R. Keylor, *Academy and Community: The Foundation of the French Historical Profession* (Cambridge, Mass.: Harvard University Press, 1975).

45 UTL, Griffith Taylor Papers, MS 20, Box 23, 'Climatology of Australia,' in *Handbuch der Klimatologie* (Berlin: n.p., 1932). Taylor outlines (1-6) the history of meteorology in Australia from its first records by Sir Thomas Brisbane to the appointment of H.A. Hunt, the first Commonwealth Meteorologist in 1907.

46 UTL, Griffith Taylor Papers, MS 20, Box 23, 'Australia's Future Population; Agricultural Regions of Australia,' *Proceedings of the Third Pan-Pacific Congress* (Tokyo, 1926), vol. III, 1657.

World War I veterans in the interior, and the patriotic boosterism of those such as C.J. Brady who wrote *Australia Unlimited* in 1918,<sup>47</sup> Taylor warned that 'Nature never intended them for anything but sparse pastoral occupations.'<sup>48</sup>

By the 1920s, Taylor's forceful denial of Australia's future potential came in direct conflict with Australia's post-war frustrations with a lack-lustre economy and growing fears that an empty Australia would invite invasion from the Asian hordes. Ironically, Taylor, whose own brand of nationalism led him to believe that geography made Australian history unique and set it apart from the European experience, was castigated by the press as unpatriotic.<sup>49</sup> The fierce debate over Taylor's opinions was more than a conflict between two visions of Australia's future; rather, it revolved around the fundamental question of who would conduct national planning, politicians or scientists. Taylor contended that, in an era of increasing world competition for limited resources, 'the future of Australia must increasingly depend upon settlement practices founded upon the scientific expertise of the trained geographer.'

It was, in fact, Taylor's advocacy of a 'science of settlement' especially in the remaining marginal lands, which first drew him to the attention of the American geographer, Isaiah Bowman. In 1927 Bowman sent Taylor a copy of his article 'The Pioneer Fringe,' which had arrived at very similar conclusions as Taylor regarding the need for further research into the processes of frontier settlement. In fact, Taylor's 1926 article on 'Frontiers of Settlement in Australia' became one of the chief intellectual inspirations of Bowman's pioneer-belts project undertaken a year after the publication of Taylor and Bowman's groundbreaking articles.<sup>50</sup> However much Taylor's conception of the modern relationship between science and government was accepted in the United States, the battle over scientific authority continued unabated in Australia until his departure in 1928.

47 J.M. Powell, 'Soldier Settlement in the Dominions,' *Journal of Australian Studies*, 8 (1981): 69-71; Powell, 'Protracted Reconciliation: Society and the Environment,' in MacLeod, ed., *op. cit.* note mm 249-71. For his debate with Brady see Taylor, *Environment, Race and Migration* (Toronto: University of Toronto Press, 1937), 384.

48 Griffith Taylor, 'Our Open Platform – Our Tropical Spaces,' *The Forum*, 7 (November 1923).

49 UTL, Griffith Taylor Papers, MS 20, Box 23, 'Agricultural Regions of Australia;' Taylor, *Australia: A Study of Warm Climates*, 405. The Government under Prime Minister Bruce censured Taylor in parliament, and the venerable ethnologist, Daisy Bates, called Taylor a 'defamer of Australia's heritage,' in 'A Protest,' *Sydney Morning Herald*, 5 July 1924.

50 Griffith Taylor, 'Frontiers of Settlement in Australia,' *Geographical Review*, (1926); Isaiah Bowman, 'The Pioneer Fringe,' *Foreign Affairs*, 6 (October 1927), 49-66; UTL, Griffith Taylor Papers, MS 20, Box 22, copy of 'The Pioneer Fringe,' sent by Bowman to Taylor, with Taylor's annotations. It is apparent from this article that Bowman was very familiar with the corpus of Taylor's extensive writing on the subject. Taylor had been a regular contributor to Bowman's *Geographical Review* since 1919.

In 1921, Taylor severely criticized a government scheme to establish 'a million farms' in Australia's interior, stating that 'the promoters of the scheme seem to have little conception of the scientific factors which control future settlement.' Sir Joseph Carruthers responded by saying that Taylor was merely posing as an authority and had still to prove his expertise as a scientist.<sup>51</sup> However, Taylor contended that government planning should be based upon empirical data, a hazardous view, as politicians countered by enlisting the expert advice of the Canadian possibilist geographer, Vilhjalmur Stefansson. As Trevor Levere has recently shown, Stefansson was anything but a scientist in the modern sense of the term; but by resorting to what Sydney's radical *Bulletin* derisively termed a 'foreign expert,' the politicians actually conceded Taylor's point. Even Sir Edgeworth David entered the fray,<sup>52</sup> defending the claim that science represented an objective authority more definitive than either political or public opinion. One reviewer of Taylor's volume *Environment and Race* (1927) rashly claimed that, by its empirical 'scientific approach' it had ensured that 'the future of Australia will be controlled by facts, and not by political pipe-dreams.'<sup>53</sup>

In many ways Taylor's views on science were shaped by World War I. 'We celebrated Peace quietly in the Churches yesterday,' Taylor wrote to Mr. Johnson at Oxford University Press. 'The prevailing feeling was not one of jubilation, but rather of a general belief that the world would learn many lessons from the great struggle.'<sup>54</sup> Like many scientists Griffith Taylor saw the war as a watershed. He had not, like David, gone to France, and had only undertaken

51 UTL. Griffith Taylor Papers, MS 20, Box 22, 'A Million Farms: a Criticism by Professor Griffith Taylor, and Reply by Sir Joseph Carruthers,' *Sydney Morning Herald*, 27 August 1921.

52 'Stefansson's Opinion Discussed in Parliament,' *Sydney Morning Herald*, 31 July 1924; David, 'A Wilderness: Australia's Arid Centre,' *Sydney Morning Herald*, 13 August 1924. See Trevor H. Levere, 'Vilhjalmur Stefansson: The Continental Shelf and a New Arctic Continent,' *British Journal of the History of Science*, 21 (June 1988): 233-47, for Stefansson's strategy to co-opt the language of modern science in order to receive government funding for exploration of the Canadian North. Stefansson was a brilliant choice to counteract Taylor's environmental determinism. He was such an extreme possibilist that he believed man could live with ease even in the far north. The *Bulletin* (5 June 1924) attacked Stefansson largely because he represented Australians worshipping yet again at 'the shrine of the foreign expert.'

53 'Review of *Environment and Race*,' *Journal of Psychology and Philosophy*, V (1927), 311. Taylor, of course, had the last word on the subject, as his definition of what constituted the Australian desert became the accepted interpretation by the 1930s. However, as his friend Douglas Mawson argued, Taylor's interpretations were built upon the narrowly conceived terms of agricultural settlement and that the interior had blossomed during the 1940s because of the development of secondary industry and the development of mining. See ANL, Griffith Taylor Papers, 1003/6/197, Mawson to Taylor, 17 March 1944.

54 ANL, 1003/4/5713, Taylor to Mr. Johnson, 7 July 1919.

voluntary war service by lecturing to aviators on weather patterns.<sup>55</sup> Like his good friend and fellow geographer Ellsworth Huntington, Taylor contended that the war signalled an end to traditional values, for the disciplines which had supported the classics and philosophy had failed to preserve world peace. Now was the time to reject 'reverence for accepted principles simply because they are old,'<sup>56</sup> and to seek a rejuvenated international science, linked to the wider society. As he wrote to David in September 1919, problems formerly considered from either an ethical or philosophical perspective must now be solved by the hard empiricism of science:

The vital problems of the future – in politics as in war – is [sic] based on scientific study. I may instance the people of our empty north - largely a climatic question. The 'Yellow Peril' is purely an economic problem. The control of the Pacific and many similar problems ... lie with Anthropogeography. We may look forward to a time when our politicians and statesmen will realise the need for some accurate knowledge of the advantages and disabilities obtaining on our island continent.<sup>57</sup>

The war had conferred a dual legacy on Australian science. As Sir Douglas Mawson commented in his 1921 Presidential Address to Section E, at the first AAAS meeting held since 1914, the war had dislocated 'the even tenor of our scientific world.' For geographers in particular, the war afforded great opportunities, not only in military map-making, but also in the peace-making process. The famous American geographer, Isaiah Bowman, acted as a key adviser to President Wilson at the peace conferences. Indeed, his example emboldened geographers everywhere to the possibilities of their newly established science. In Mawson's view, human geography had displaced history as the premier discipline in establishing a new world order: 'The old order of things has gone, and a new system is taking its place. Empires have broken up, and new political divisions have been created. In this re-arrangement the fundamental lessons which the study of human geography teaches have been taken into consideration, and it is hoped that thereby a greater degree of international confidence has been secured.'<sup>58</sup>

55 ANL, Griffith Taylor Papers, 1003/4/137/16A, Taylor to E.L. Piesse, requesting more war work. It is unknown why Taylor did not seek war service, although this may have been due to his pacifist sympathies.

56 UTL, Griffith Taylor Papers, MS 20, Box 22, Taylor, 'Review of Ellsworth Huntington, *The Character of Races*,' *Ecology*, VI (October 1925), 453-57.

57 ANL, 1003/4/137/98B, Taylor to David, 17 September 1919. Ellsworth Huntington arrived at similar conclusions in, *World-Power and Evolution* (New Haven: Yale University Press, 1920), 17-18.

58 Professor Sir Douglas Mawson, 'Presidential Address, Section E (Geography and History),' *Report of the Australasian Association for the Advancement of Science*, 15 (1921), 145-46.



For Taylor, the war widened the gulf between the objective and subjective.<sup>59</sup> Although he paid lip service to history and the humanities, he considered the natural sciences as the centrepiece of modern citizenship. In turn, geography was the 'study of the environment in its relation to human values.' This did not indicate that human values were independent criteria for modern life; rather, Taylor believed that objective truth achieved through the sciences must replace subjective values as the foundation of culture. 'True culture' – which Taylor, the modernist, defined as a love of beauty and nature and the concern for other individuals and nations – could be promoted best study of the human environment – that is, the response of human societies to geographical control.<sup>60</sup> In fact, Taylor was dismissive of knowledge which could not be quantified, and in his 1922 article 'The Distribution of Future White Settlement,' satisfied himself that neither religion nor the individual 'psychical factor' played any role in the frontier experience.<sup>61</sup> Taylor's scientism rested upon a naive belief in the neutrality of the scientific method. Unlike contemporary social scientists who used scientific concepts as analogies, Taylor applied natural scientific methods to discussions of race, language, and even history and culture. He measured racial characteristics 'isopleth' graphs which correlated hair texture and colour with an individual's cephalic and nasal index. He devised an 'econograph' which plotted climate and natural resources to forecast economic development; the ethnograph studied nations in such a way as to 'diminish the personal equation' of traditional historians. And he applied geological concepts to the terminology of racial and cultural evolution, distinguishing surviving racial stocks as 'inliers,' islands of older racial stocks which remained exposed, from 'outliers,' later racial 'strata' whose 'connecting deposits' of migration had cut them off from their true ethnic roots. Language, like a lava-flow, originated in a 'fissure eruption' centred

59 As Roy MacLeod has argued in *The Social Function of Science in Britain* (Brisbane: Griffith University, 1980), the First World War pressed science into occupying a greater role in the universities than the humanities.

60 UTL, Griffith Taylor Papers, MS 20, Box 22, copy of Bowman's 'Pioneer Fringe' in which Taylor had underscored the separation of the objective and subjective; Box 23, 'Geography in Secondary Schools,' 397. The post-war attitude of natural scientists towards the humanities is well illustrated by W.J. Sollas, Professor of Geology at Oxford, told Taylor that the 'advancement of earth knowledge' was being compromised by historians who wished to 'bastardise' geography by linking it with their discipline. Like Taylor, Sollas perceived this as one battle in the war of 'the classics against the sciences.' ANL, Griffith Taylor Papers, 1003/4/186, Sollas to Taylor, 6 July 1920. For the turn towards objectivity within American science and social science following the war, see Ronald C. Tobey, *The American Ideology of National Science, 1919-1930* (Pittsburgh: University of Pittsburgh Press, 1971); Ross, *The Origins of American Social Science*, 320-26; and Bannister, *Sociology and Scientism*.

61 Taylor, 'The Distribution of Future White Settlement,' *Geographical Review*, 12 (1922), 390.

in Asia and each new eruption of lava pushed the older layers further outwards towards the periphery.<sup>62</sup> During the Second World War, he even designed a 'dynograph' to chart and measure the relative power of the Axis nations.<sup>63</sup>

For Taylor, science bore no real relationship to ethics; science was narrowly concerned with 'physical co-efficients,' for man was 'eminently a reasoning animal.'<sup>64</sup> Taylor adhered to a rigorous objectivity which completely eviscerated the spirit, the mind, and indeed, any individual initiative from human evolution: 'Man can do nothing with the land,' he wrote, 'until nature has spread her green mantle thereon.'<sup>65</sup> Like many other twentieth-century scientists confident of the independent status of science, Taylor's approach was to divorce it completely from religion. Indeed his total disregard for affairs of the spirit evoked much anxious hand-wringing from both his wife and sister who were believers.<sup>66</sup> Taylor intellectually traversed far from David and Sollas who conceived of nature as the seedbed of spiritual feeling. Nothing evokes the vestiges of this natural theological outlook and better contrasts with the modern scientific pose struck by Taylor's exaggerated analytical attitude towards the environment than W.J. Sollas' passage in a letter to Edgeworth David in 1933:

It is spring with us now and I am writing with the sunlight pouring in at my windows and the trees swaying their leafy branches in the wind. How fine to watch them as they dance, all lit up by the sun. The flowers in the garden are radiantly happy & the birds are throbbing with song. And I too rejoice – no, that is not the word – I am happily conscious with that oneness with Nature which I should think must grow with all who love her truly. Yes, love is the key to it. I find the more I love the beautiful things around me the more they give me in return; and in writing this I feel I am writing to one who knows.<sup>67</sup>

In all the hundreds of letters Taylor wrote during his continuous geographical journeys, nature was never described by him in such emotional or spiritual

62 Taylor, 'The Evolution and Distribution of Race, Culture and Language,' *Geographical Review*, 11 (1921), 104.

63 Taylor, *Our Evolving Civilization*, 61, 264; Taylor, *Environment, Race and Migration*, 66, 419; Taylor, 'The Evolution and Distribution of Race, Culture and Language,' *Geographical Review*, 11 (1921), 102, 104.

64 SUA, Griffith Taylor Papers, Acc. 979, series 2, item 3, 'The Evolution of Culture and Language,' 6.

65 Taylor, *Australia: A Study of Warm Climates*, 13.

66 ANL, Griffith Taylor Papers, Dorothy(sister) to Doris, 23 July 1924. For the absence of biblical views from twentieth-century American science, see George Marsden, 'Evangelicals and the Scientific Culture: An Overview,' in Michael J. Lacey (ed.), *Religion and Twentieth-Century American Intellectual Life* (Cambridge: Cambridge University Press, 1989), 41-44.

67 SUA, Edgeworth David Papers, 1/24, series 32, Box 43, W.J. Sollas to David, 29 April 1933.

terms.<sup>68</sup> Taylor conceived of nature as a substitute for religion, a giant laboratory for analysis, its landforms to be measured and assessed, so that the geographer – who was meant to replace God as the sole interpreter of Nature's mysterious laws – might forecast and predict evolution in the future.<sup>69</sup>

In one very important sense, Taylor's approach to geography broke radically with the norms of specialized research so much a feature of science. He advocated empiricism, but rejected mere fact-finding and classification, the stuff of Baconian science, for in its modern specialized guise, it became mired in detail, and separated science from its pragmatic goal of technocratic social control. Taylor preferred the comprehensive perspective of the nineteenth-century philosophical naturalists, Huxley and Darwin.<sup>70</sup> Of Taylor's first book, *Environment and Race*, the preeminent American geographer, Ellsworth Huntington observed that it achieved 'great sweep of vision' for 'one of the greatest things that a scientist can do is to generalize without letting himself be confused by minor details.'<sup>71</sup> If science were to be reinvigorated, a new universality, like Darwin's synthesis, could be achieved through the new generalist science of geography, itself animated by the evolutionary framework, which studied the distribution and adaptation of races, languages, cultures, and nations to specific environmental regions – a form of nature-study or ecology.<sup>72</sup> Ultimately,

68 The one exception to this was a letter written from Canberra to Captain Scott in the Antarctic describing how the moon rising over Mount Ainslie reminded him of Mount Erebus. The letter appears more eloquent largely because the reader is aware as Taylor was not that Scott had already tragically perished a short distance from his depot.

69 UTL, Griffith Taylor Papers, MS 20, Box 23, 'European Migration: Past, Present and Future,' Camden College, Livingstone Lectures, Sydney, 1928, 6; Taylor, *Australia: A Study of Warm Climates*, 3; Taylor, 'A Correlation of Contour, Climate and Coal: A Contribution to the Physiography of New South Wales,' *Proceedings of the Linnean Society of New South Wales*, 31 (1906), 517-29.

70 In *The Philosophical Naturalists: Themes in Early Nineteenth-Century British Biology* (Madison: University of Wisconsin Press, 1983), Philip F. Rehbock demonstrates how there was a scientific tradition in Britain which functioned alongside Baconianism. For the Australian discussion of specialization in the sciences, see J.W. Gregory, 'The Southern Ocean and its Climatic Control Over Australasia,' *Report of the AAAS*, 10 (1904), 328-337; Baldwin Spencer, 'Presidential Address,' *Report of the AAAS*, 15 (1921), lxxvii-lxxxviii. Taylor greatly admired the generalist approach to science undertaken by H.G. Wells with whom he corresponded at length, and Julian Huxley, who edited his Antarctic volumes. For Huxley's vision of the role of evolutionary science in the twentieth-century, see John C. Greene, 'The Interaction of Science and World View: Julian Huxley's Evolutionary Biology,' *Journal of the History of Biology*, 23 (1990), 39-55.

71 ANL, Griffith Taylor Papers, 1003/4/127/6D, Huntington to Taylor, 11 March 1920.

72 In his 'Presidential Address,' Section E (Geography and History), *Report of the AAAS*, XVI (1923), 439, Taylor placed race, international relations, settlement, distribution of population, communications, economic and natural resources, and ethnology under the rubric of geography.

evolutionary humanism would reconcile the sciences and the humanities, by building a social science to bring scientific purposiveness to social planning.

Taylor was consistently defended by the Australian scientific community in his battle to have politicians accept that science had practical applications for both the government and the economy. For example, the state geologist of South Australia, L. Keith Ward, encouraged Taylor to use his university position to demonstrate to wayward Australians that 'the cause of truth and science and scientific method' with its 'unprejudiced analysis of data' was conducted mainly for the '*public's* good.'<sup>73</sup> In 1921, the Australian National Research Council was established, with Edgeworth David as its first president, in order to advance a more socially responsible science which could practically serve the interests of government and industry.<sup>74</sup> During the 1920s, the AAAS established an Ecology Committee to study Australian vegetation and recommended the creation of soil surveys in arid regions of Australia.<sup>75</sup> The public furore over Taylor's proclamations on the limitations of Australian settlement in the interior illustrated that, despite great strides made by Australian scientific institutions since the creation of the AAAS in 1888, the practical advantages of science so emphatically demonstrated in the war did not inform the attitudes of the Australian public.

In fact, Taylor's view that science was 'an essential factor in national progress' (especially in new countries like Australia, still in a pre-industrial, 'pioneer' phase) found little response from a war-weary and insular Australia. Indeed, there appears to have been a great divergence between the renewed optimism in the value of science that the war engendered in Australian scientists, and the conservative and retrenching policies of Australian governments. As Taylor told a Prohibition conference in 1923, wartime achievements in science had proved that modern geographers could effectively predict the future population in a way that Malthus only dimly perceived. No longer would scientists have to avoid the 'treacherous sea of prophecy':

73 ANL, Griffith Taylor Papers, 1003/4/129/29D, L. Keith Ward to Taylor, 5 November 1920. He was a close scientific friend of Taylor and was perhaps also the closest in intellectual orientation and affinity. They continued a constant exchange of letters in which they berated Australian politicians for their conservativeness and backward attitudes with regard to science.

74 Roy MacLeod, 'From Imperial to National Science,' in MacLeod (ed.), *op. cit.* note mm, 61. Upon the impact of science upon government in the 1920's, MacLeod observed: 'For a decade and more the question of science and its larger social responsibilities would slumber in Australia.' MacLeod stresses the divergence between the ideas of scientists and their acceptance by government during the 1920s. See also Ian Inkster and Jan Todd, 'Support for the Scientific Enterprise, 1850-1900,' in R. W. Home (ed.), *Australian Science in the Making* (Melbourne: Oxford University Press, 1988), 126.

75 Linden Gillbank, 'The Life-Sciences: Collections to Conservation,' in MacLeod (ed.), *op. cit.* note mm 106-111.

Never was there in history an era of such inspiring progress as this, of such amazing change, of such entire reversal of accepted theories, of such realisation of the apparently impossible. Science is unlocking doors on every hand, and behind them lie treasures so incredible that we can only tremblingly proceed to pick them up.<sup>76</sup>

The obstacles preventing Australian science from reaching the Nirvana which Taylor described, were volubly expressed by L. Keith Ward in a letter to Taylor in 1920 concerning the practice of water divining. From his point of view it splendidly illustrated the persistent hold that superstition – and here he meant religion and traditional beliefs – had upon sections of the Australian public. As a scientific geologist Ward was at a loss to present a cogent argument against the diviner who believed his authority was conferred as a gift from God.<sup>77</sup> Taylor's ultimate solution to the Australian people's reluctance to accept the world as defined by the expert scientist was to depart for the University of Chicago, but until he did so he took comfort from the knowledge that even Huxley and Darwin were vilified.<sup>78</sup>

## 2. Towards an Ecology of Race

Griffith Taylor's *Environment and Race* was published in 1927, under the editorship of Sir Arthur Keith, the famous anatomist and defender of Piltdown Man. It was welcomed internationally as one of the most important new contributions to evolutionary theory and its relationship to the origins of man. In a review in *Ecology*, the Yale geographer, Stephen S. Visher considered it a seminal contribution to 'human ecology' in boldly studying the effects of the environment upon the distribution and migration of the human races. The Oxford ethnologist R.R. Marett, a committed Darwinian, praised it for its 'large and steady vision' and its 'working hypothesis of singular breadth and completeness. The *Chicago Evening Post* declared it a monument of contemporary science, conclusively establishing the 'general theory of organic evolution.'<sup>79</sup> Taylor himself called it a contribution to what he termed 'the new ethnology,'

76 ANL, Griffith Taylor Papers, 1003/9/227, 'Population and Pessimism,' 10 October 1923.

77 ANL, Griffith Taylor Papers, 1003/4/127/52C, L. Keith Ward to Taylor, 20 March 1920.

78 SUA, Acc. 979, Group 163, series 2, item 1, 'The Antiquity of Man.'

79 Stephen S. Visher, 'Review of *Environment and Race*,' *Ecology*, IX (1928): 529; R.R. Marett, 'Review of *Environment and Race*,' *Anthropology*, (February 1928): 492; R.A. Goodwin, 'Review of *Environment and Race*,' *Chicago Evening Post*, 30 March 1928. *Environment and Race* (Oxford: Oxford University Press, 1927) was a synthesis of a series of articles first published by Isaiah Bowman in the *Geographical Review* between 1919 and 1921, and was later reissued with new material on Canada and Australia as *Environment, Race, and Migration*. It was also published in China and Japan, where, for reasons which will become obvious, it was hugely popular.

the study of the impact of physical geography upon the evolution and distribution of racial types.

*Environment and Race* was written within the mainstream of physical anthropology, then experiencing a resurgence in popularity. In fact, it synthesized the most recent literature on racial science. The work of Alfred Haddon, lecturer in ethnology at Cambridge; A.H. Keane, professor of Hindustani at University College, London; and William Z. Ripley, professor of sociology and anthropology at Columbia University contributed new data on racial traits. These modern scientists used a classification of races based upon a range of anthropometric measurements, but Taylor addressed a much grander theme of the origins and distribution of racial groups, a problem long forgotten since the ethnology of James Cowles Prichard in the early nineteenth century.<sup>80</sup> While Prichard had studied racial origins before the advent of Darwinian evolution, Taylor immodestly envisioned his volume on human evolution a worthy successor to the nineteenth century evolutionary and biogeographical traditions. The evolutionary framework would offer a coherence to nature which had been sundered by scientific specialization. To his father he wrote:

I really think I can explain the cause of the Ice Ages, and of the origin of the human races, the stages in the evolution of life, and the periods when life evolved so rapidly. It explains coal formation, mountain building, salt deposits, and gives a good clue to the actual periods occupied in the geological succession. You'll wonder whether your eldest has had his head turned.... It is curious how my cogitation on Archeocyathinae Corals, on the Ice Ages ... on the migrations of men, and on the desert climate of Ooldea &c. should weld together into this coherent whole.<sup>81</sup>

Taylor's reconstruction of his racial hypothesis according to this long-gestation theory differed from his recollections to Edgeworth David, that he 'struck oil' one July morning when his main ideas miraculously presented themselves in a flash of inspiration. But it seems he combined his work on climate control and racial evolution when he was requested by the Intelligence Staff to study Mongolian settlement, while he was employed by the Commonwealth Weather Service.<sup>82</sup>

Taylor's suggestive reinterpretation of human evolution – 'his great general racial plan of mankind,'<sup>83</sup> as Ellsworth Huntington called it – had as its central

80 For the most thorough discussion of Prichardian ethnology, see, George W. Stocking, *Victorian Anthropology* (New York: The Free Press, 1987), chapter 2.

81 ANL, Griffith Taylor Papers, 1003/4/127/80B, 1 August 1919. I do not think it insignificant that Taylor was searching for a unifying theory of human development immediately following the First World War.

82 ANL, Griffith Taylor Papers, Taylor to Edgeworth David, 14 April 1920; SUA, Edgeworth David Papers, 1/24, series 32, Box 43, Taylor to David, 31 July 1919.

83 Ellsworth Huntington, 'Review of *Environment and Race*,' *The Saturday Review*, 3 (1

argument the thesis that the oldest evolved species were characterized by the widest geographical distribution; this he owed to the work of J.C. Willis, the botanist, Clark Wissler, the anthropologist, and, most importantly, to the outstanding American palaeontologist and zoologist, W.D. Matthew. Wissler's *Relation of Man to Nature* (1926) only confirmed Taylor's earlier conclusions. Taylor first met Wissler, then with the American Museum of Natural History, when he visited Australia in 1925 with a representative from the Rockefeller Foundation, to make recommendations for an Australian Chair in anthropology.<sup>84</sup>

Willis' studies of the ecological distribution of plant life were instrumental in stimulating Taylor's revision of Darwin's theory of natural selection. Building on the researches of Charles Lyell and Joseph Hooker into the diffusion of species, Willis in *Age and Area*, postulated that age was a more powerful biological law than natural selection in determining the area covered by a species. More tellingly, he foreshadowed Taylor's idea that races spread in concentric circles out of a point of origin in Asia when he cited climate as the motive force which induced a species to migrate in a directed fashion 'like rings formed by casting a stone into a pool.'<sup>85</sup>

The decisive intellectual influence upon Taylor was undoubtedly W.D. Matthew, curator of the Department of Vertebrate Palaeontology within the American Museum of Natural History. Upon reading his articles on Australian climate, Matthew sent Taylor a copy of his 1915 memoir on *Climate and Evolution*,<sup>86</sup> originally delivered to the New York Academy of Science in 1911. Later, Taylor would refer to this as the 'most stimulating research' he had ever read.<sup>87</sup> Matthew suggested that mammalian evolution began in the rigorous climate of northern Asia and progressively spread outwards to more marginal tropical environments when certain unfit species failed to adapt to the abruptly changing climatic conditions brought about by successive ice ages.<sup>88</sup>

October 1927), 45.

84 See D. J. Mulvaney, 'Australasian Anthropology and ANZAAS: 'Strictly Scientific and Critical,' in MacLeod (ed.), *op. cit.* note *mm*, 208.

85 J. C. Willis, *Age and Area: A Study in Geographical Distribution and Origin of Species* (Cambridge: Cambridge University Press, 1922), 4, 138.

86 Griffith Taylor, *Journeyman Taylor*, 139. Interestingly Matthew wrote to Taylor in response to Taylor's own theories on climate and evolution, and advised him against Wegener's continental drift theory - stating that he was an 'agnostic' on the subject - and warned Taylor against 'building too high up on the insecure foundation that they [hypotheses] afford.' ANL, Griffith Taylor Papers, 1003/4/127/180, W.D. Matthew to Taylor, 19 July 1920.

87 Taylor, *Our Evolving Civilization*, 55.

88 W.D. Matthew, *Climate and Evolution* (New York: Charles Scribner and Sons, 1939; first edition, 1915), 3, 11, 33.

Like Taylor, Matthew was a polymath whose combined knowledge of geology and biology enabled him to forge a dynamic new explanation of evolution. In particular, his geological background encouraged Matthew to focus upon climate and environment as against the view, dominant among American palaeontologists, that ontogeny or mechanisms internal to the organism were responsible for evolutionary development. 'The whole of evolutionary progress,' wrote Matthew, 'may be interpreted as a response to external stimuli.'<sup>89</sup>

Growing up in Saint John, New Brunswick, William Diller Matthew was instructed in geology and palaeontology by his father George F. Matthew, who was the leading expert on Acadian geology, fossil plants and amphibian footprints. An outstanding amateur naturalist, the elder Matthew was one of the charter members of the Royal Society of Canada and later attracted international acclaim by winning the coveted Murchison Medal from the Royal Geographical Society for his two hundred scientific papers. In 1890, W.D. Matthew studied the structure of rocks at Columbia University's School of Mines, but in 1894, fell under the sway of the nation's leading palaeontologist and biologist, Henry Fairfield Osborn.<sup>90</sup> Despite the fact that he had studied under, and later worked for, Osborn at the American Museum of Natural History, Matthew was one of the first American palaeontologists to reject Osborn's idealist interpretations of vertebrate evolution in favour of Darwin's theory of random variation, natural selection. Matthew's theories were an interesting amalgam of Buffon's dictum that the natural pattern of migration from north to south mirrored the state of society, from civilized to the primitive; Alfred Wallace's notion that plant and mammals migrated on land-rafts which enabled to dispute the more common land-bridge theories; the University of Chicago geologist, T.C. Chamberlain's hypothesis that the earth's climate had experienced period shifts from moist to arid; and Joseph Hooker's observation that after plants have been driven southwards by colder climes, only the

89 Matthew, *Climate and Evolution*, 33. Most palaeontologists of the day with either Lamarckians or accepted other non-Darwinian theories of evolution such as orthogenesis. See Stephen Jay Gould, 'G.G. Simpson, Palaeontology and the Modern Synthesis,' in Ernst Mayr and William B. Provine, eds., *The Evolutionary Synthesis* (Cambridge, Mass.: Harvard University Press, 1980), 154-55. Many historians have concluded that, although he combined an environmentalist perspective with some overtly Darwinian perspectives, Matthew came closer than any other American palaeontologist to claiming the title of a Darwinian. See Bowler, *Theories of Evolution*, 175; Ronald Rainger, 'Just Before Simpson: William Diller Matthew's Understanding of Evolution,' in *Proceedings of the American Philosophical Society*, 130 (1986), 453-63.

90 For biographical details concerning W. D. Matthew, see W.K. Gregory, 'A Biographical Sketch of William Diller Matthew, 1871-1930,' in Matthew, *Climate and Evolution*; Ronald Rainger, 'W.D. Matthew, Fossil Vertebrates and Geological Time,' *Earth Sciences History*, 8 (1989): 159-66; Edwin H. Colbert, 'W.D. Matthew's Early Western Field-Trips,' *Earth Sciences History*, 9 (1990): 41-44.



strongest could migrate northwards once the cycle of climate had returned to a period of warmth.<sup>91</sup>

Matthew's theory of a 'Holarctic' or northern centre for the evolution of mammals together with his idea that evolution spread over time in progressively larger radial zones towards the geographic margins of earth, were suggestive to Taylor's interpretations of race. Taylor argued against the prevailing view that human development differed from the evolution of the lower mammals because man's moral and rational faculties required purely naturalistic forces to play a lesser role. Taylor insisted that human evolution and migration were the outcome of the same external stimuli, climatic and environmental change, that dictated mammalian evolution. In this respect, Taylor's evolutionism was an assault on late nineteenth century teleological and idealist interpretations of human progress, the most famous being T.H. Huxley's forceful attack on Darwinian materialism, *Evolution and Ethics*.<sup>92</sup> Where Huxley saw a vast discontinuity between man's moral faculties and animal instinct, between culture and nature, Taylor wheeled his empirical Darwinian phalanx around the merely speculative, ethical and hence indefensible position of 'soft' evolutionists, and thus reintegrated mankind into the continuity of the natural world.

As an atheist untroubled by the implications of Darwinism, Taylor removed mind and individual free-will as independent variables within organic evolution. He concluded: the recurring cycle of climatic change 'exercised perhaps paramount influence on the evolution of life.'<sup>93</sup> If the extreme changes in climate during the Tertiary could induce the rapid evolution of mammals, such material forces could just as easily stimulate cultural progress, and originate the first 'true civilization' in Turkestan during the same period.<sup>94</sup> Human and racial development was thus simply an epiphenomenon of environmental change and adaptation.

Like Matthew's mammalian species, Taylor's 'strata' of human races were created in a series of regular cycles, conditioned by four successive ice ages in the Pleistocene, which both evolved upwards and geographically moved outwards from the centre of evolution. The most primitive races, Piltdown and

91 Matthew, *Climate and Evolution*. For Joseph Hooker's influence, see Michael Ruse, *The Darwinian Revolution* (Chicago: University of Chicago Press, 1979), 225-26.

92 Although there were many evolutionary thinkers who attempted to bypass the more materialistic implications of Darwinian evolution, I have used Huxley's idealist refutations because they were the most succinct and the most famous statements made during the late nineteenth century debate over man's role in evolution. On Huxley, see James Paradis and George C. Williams, *Evolution and Ethics* (Princeton: Princeton University Press, 1989).

93 UTL, Griffith Taylor Papers, MS 20, Box 23, 'Climatic Cycles and Evolution, 'Geographical Review, VII (1919), 289.

94 Taylor, *Environment, Race and Migration*, 158.

Neanderthal man, emerged during the first Ice Age, and were in turn pushed outwards towards Britain and France when the second Ice Age, with its cooler climate, induced the 'growth of civilization and intellect' represented by the Australian and Cro-Magnon cultures. The third Ice Age brought yet another 'break in the continuity of descent' and produced a yet higher race characterized by the Eskimo and Yellow-Brown bushmen of South Africa. Ultimately the highest races, those with a 'cephalic index' over 76 – the Nordic, Mediterranean and Alpine peoples – emerged as a result of the fourth and final Ice Age.<sup>95</sup>

Taylor explained the diversity of racial groups by intermarriage through multiple migrations, and by concluding that the Nordics and Mediterraneans were two wings of a single migration, whose skin and hair colour were darkened or bleached depending upon the warmth or coolness of their chosen climate. Similar peoples spread out in waves to form discrete racial zones. In these, the most primitive peoples, such as the Australians and Negritos (i.e., the Pygmies) occupied the most distant zones. Taylor could thus draw racial lines connecting the Savoyards in France and the Pamirs, the British and Polynesians, the Canadian West-Coast Indians, the Japanese, and the Swiss. He used the geological concept of the 'inlier' to account for pockets of primitive stock remaining within superior racial zones, such as the Neanderthal Welshmen within Britain. Certainly, Taylor's new equation of racial distribution preserved the notion that nature was a progressive system, insofar as each Ice Age yielded a more highly developed form. However, because Taylor viewed culture as the product of a favourable environment, he separated culture from race, and thus attempted to remove the stigma of racial mental characteristics so much a part of contemporary biological theories of race.

It was simply bad luck, Taylor contended, that the Fuegians had settled in an environment which consigned them to barbarous savagery while their blood-brothers developed the Etruscan civilization. Moreover, his 'colour-bands' – a notion borrowed from physics – drew peoples traditionally defined as 'coloured' – namely, East Indians, Polynesians, North American Indians, and Asians – into racial categories usually considered the preserve of northern Europeans. Taylor thus dispelled the Nordic myth, and set out a new world order in which the east and the west would converge. 'The section of Civilisations show that though we are low down on the ethnological tree, yet that doesn't seem to matter much,' Taylor informed W.L.G. Joerg, joint editor of the *Geographical Review*, 'Environment is the chief factor and your "melting pot" in U.S.A. will work out splendidly in the future.' Taylor hoped that his new racial configuration would 'make for World Brotherhood; though it

95 For a detailed discussion of Taylor's racial views, see Nancy J. Christie, 'Environment and Race: Geography's Search for a New Darwinian Synthesis,' in Roy MacLeod and P.F. Rehbock (eds), *Darwin and the Pacific Evolutionary Theory in the Laboratory of the Pacific* (Honolulu: University of Hawaii Press, 1994).

seems to hold out little hope for the Negro. However if it raises the Mongolian, Polynesian and Amerind in the eyes of the world; that is no mean result.<sup>96</sup>

Taylor's rigid scientism and stringent materialism became an exposed target for the invective of the Boasian cultural anthropology school, then dominant in the United States. In a sizzling review sarcastically entitled 'Isothermic Anthropology,' Ruth Benedict censured Taylor for eviscerating human values from anthropology:

But one cannot help wishing that, since he has turned his attention to so volatile and complex a creature as man, Professor Taylor's previous training had been in something less simple and massive than stone or less regular than the effect of low pressure areas. If his training had been in birds, for instance, he could have made allowance more easily for the nobility and unexpectedness of men. He might even, perhaps, have been led to consider that no form of animate life is completely passive under the workings of environment; that since the dawn of history, when men first forced fire to serve his ends, environment has not been the immitigable sum of forces that works on stone and atmosphere, but the adaptable and man-made condition, which all races modify to their necessities and compel to serve their purpose.<sup>97</sup>

Benedict's critique of *Environment and Race* presaged the debate unleashed in Australia following the publication of Taylor's views on race. The question of whether racial policy was a scientific or moral question was stated succinctly by E.L. Piesse, Director of the Pacific Branch within the Australian Prime Minister's Department. As Director of Military Intelligence during the war, Piesse had hired Taylor to lecture on climate to aviators in Melbourne. Later, with Taylor at the Institute of Pacific Relations, Piesse became interested in studying the peoples of the Pacific,<sup>98</sup> and in the process became an orientalist fascinated with the achievements of Chinese culture. Nevertheless, Piesse wrote *White Settlement in Tropical Australia* to defend the White Australia Policy's animus against oriental immigrants. As Piesse warned Taylor in 1920, racial prejudice was valid. 'Unless force makes it otherwise, White Australia has nothing to do with geography or climate, and is to be discussed only from

96 ANL, Griffith Taylor Papers, 1003/4/127/57C Taylor to Joerg, 27 March 1920; 1003/4/127/82C Taylor to Joerg, 17 May 1920.

97 Ruth Benedict, 'Isothermic Anthropology,' *New York Herald-Tribune*, 22 January 1928. Interestingly, in 1942 Benedict was to pen a volume entitled *Race and Racism* which used physical anthropology to reach similar conclusions as Taylor, including an attack on the myth of Nordic superiority. For Mencken's remarks, see H.L. Mencken, *The American Mercury*, (December 1927).

98 For the growth of scientific cooperation in the Pacific after World War I, see Philip Rehbock, 'Organizing Pacific Science: Local and International Origins of the Pacific Science Association,' in MacLeod and Rehbock, ed., *Nature In Its Greatest Extent*. Taylor started attending the Pan-Pacific Science Conferences in Melbourne in 1923 and attended the Tokyo Conference in 1926.

the viewpoint of the historical and mental sciences; and they would invite you to keep off the grass unless you are ready to discuss it from these viewpoints.'<sup>99</sup> Taylor countered by arguing that the racial problems of the Pacific could be solved only by trained scientists whose unbiased judgements could quell the 'alarmist tendencies' unleashed by nationalist fervour. Once again, Taylor had overestimated the authority science wielded over Australian public opinion, and as A.B. Piddington – a eugenicist fond of quoting the Canadian political economist and humorist Stephen Leacock – rightly observed, the pitfall of modern scientific thought was that it consistently ignored the most powerful force of the twentieth-century, 'national passions.'<sup>100</sup>

In fact, it would appear that Taylor had an uncanny ability to employ his scientific knowledge so as to challenge every icon of the Australian national psyche. Ultimately, this did little to advance Australian science, for there was no greater sacred cow than the White Australia policy, whose tenets of Anglo-Saxon exclusivity permeated the very core of Australian cultural nationalism, the constitution, and labour relations. When employed by the Meteorological Bureau, Taylor proudly proclaimed that he was the only government official to oppose the White Australia policy. Since his research on the 'Yellow Race' was undertaken at the request of the Chief of the Weather Bureau (whom he despised), Taylor's vociferous heterodoxy was probably in protest against what he termed 'the government treadmill.'<sup>101</sup> He doggedly pursued his impolitic campaign, proclaiming to an Australian public, fearing an Asian irruption into the unsettled North, that the Chinese had 'come out at the apex of human evolution' and that intermarriage with these superior Alpine peoples would strengthen Australia 'biologically.'<sup>102</sup> True to his scientific myopia, and with studious disregard for Australian sensibilities, Taylor observed no difference between a French Alpine marrying a French Mediterranean type, and a woman from Devon, also of Mediterranean stock, marrying a Chinese Alpine!<sup>103</sup>

The racial theories that Taylor believed were a remedy to international racial antagonism, were termed 'mongolization' by the Australian body politic.

99 ANL, Griffith Taylor Papers, 1003/4/127/30D, E.L. Piesse to Taylor, 26 November 1920.

100 ANL, Griffith Taylor Papers, 1003/4/489, 'Race Mixture,' *Sydney Morning Herald*, 18 October 1927; 1003/9/227, A.B. Piddington, 'Our Birth-Rate and the Near North,' 9 June 1923.

101 ANL, Griffith Taylor Papers, 1003/4/127/98B, Taylor to Professor Carslaw, Sydney University, 13 September 1919.

102 SUA, Griffith Taylor Papers, Acc. 979, series 2, item 3, 'Climate and Dispersal of Man,' August 1916; Taylor, *Environment, Race and Migration*, 370.

103 Taylor, *Our Evolving Civilization*, 87; Taylor, *Environment, Race and Migration*, 218. In 'The Evolution and Distribution of Race, Culture and Language,' 115, Taylor concluded somewhat naively that the problem of racial antipathy would be solved if other races were simply treated as 'ethnic equals.'

Saying that racial mixture had been universal since time immemorial invited the retort that Taylor, the 'Counsel for the Yellow Streak,' had succumbed to the Yankee climatologist's predilection for modern business efficiency.<sup>104</sup> In fact, Taylor saw the White Australia policy as a temporary necessity, for once people recognized that the Chinese and Japanese were among the advanced races and far above the 'negro' on the evolutionary ladder, racial and social peace would prevail.<sup>105</sup> But Taylor did not oppose the tenets of White Australia for reasons of progressive idealism; rather, he opposed it for the reasons advanced by its backers. Like many others in the 1920s Taylor was not sanguine about the inevitability of progress among the white nations, and believed that without constant competition and stimulus, white societies – and in particular, those such as Australia experiencing the stagnating conditions of the tropics – would degenerate. Taylor demonstrated how in Queensland, white women, overworked and without coloured servants, were losing both their physical beauty and their social freedom, two telling signs of a 'reversion to the primitive.' Also, Australia had living proof of the deleterious effects of isolation and lack of contact with superior races – the backward and near extinct Aborigines. 'Nothing,' declared Taylor, 'is so dangerous to a people as complete isolation' and 'lack of competition surely means racial death.'<sup>106</sup> What better solution than to invite Chinese and Japanese, endowed with the key traits of patience, industriousness, and a love of order, to instil in the hedonistic and complacent Australian those ideal Victorian virtues of thrift, self-help and sobriety.<sup>107</sup>

Taylor was not the ingenue in international race relations that E.L. Piesse assumed. Well attuned to the economic and military threat Asia presented to Australia, Taylor recognized that as modern communication, trade and the British Empire brought the coloured races into uncomfortable 'jostling' contact with the Anglo-Saxons, once backward races would compete with and finally dominate them. Taylor's 'racial incorporation,' despite its liberal overtones, actually belied a hard-headed realism, which recognized the economic poten-

104 H. C. M., 'The Man of the Week - Counsel for the Yellow Streak,' *Smith's Weekly*, 14 July 1923. For the fear of intermarriage with Asians among racial hereditarians, see Daniel J. Kevles, *In the Name of Eugenics* (New York: Alfred A. Knopf, 1985), 25.

105 ANL, Griffith Taylor Papers, 1003/5/105, Sydney University Extension Board, 'Racial Mixture Around the World,' Lecture, n.d. Taylor was particularly fond of quoting Lord Bryce on the benefits of racial intermixture.

106 Taylor, 'The Evolution and Distribution of Race, Culture and Language,' 76; SUA, Griffith Taylor Papers, Acc. 979, Series 2, item 3, 'The Evolution of Culture and Language,' 29 March 1920, 29. For the wider scientific debate on the problem of biological degeneration, see Peter J. Bowler, 'Holding your head up high: Degeneration and orthogenesis in theories of human evolution,' in James R. Moore, ed., *History, Humanity and Evolution* (Cambridge: Cambridge University Press, 1989), 332-339; Bowler, 'Development and Adaptation: Evolutionary Concepts in British Morphology, 1870-1914,' *British Journal for the History of Science*, 22 (1989), 297.

107 Taylor, 'The Evolution and Distribution of Race, Culture and Language,' 97.

tial of Asia but which sought to fight through co-option and control rather than through simple-minded exclusion. As a member of the Round Table on International Relations,<sup>108</sup> Taylor well understood the important function which racial migration performed in Australia's security. Unlike Piesse, who prepared for a Japanese attack as revenge against Australia's sinophobia,<sup>109</sup> Taylor believed China could become one of the 'hot buffer lands' of economic exploitation between Australia and Japan.<sup>110</sup> In short, Taylor's strategy was not capitulation but preemptive strike, ultimately cheaper than the military option that obsessed Piesse and his political colleagues during the 1930s.<sup>111</sup>

Despite the furore Taylor aroused, the publication of *Environment and Race* in 1927 reinvigorated racial anthropology. Douglas Mawson complimented Taylor on his 'world-wide reputation,' and believed him instrumental in transforming geography from 'a Baedeker of the earth' into a scientific discipline with well-defined principles and methods. Taylor's theories were accepted by the Oxford anthropologist R.R. Marett, and their incorporation into the 1929 *Encyclopaedia Britannica* testified to their paradigmatic impact. Even A.C. Haddon confirmed Taylor's idea that geography must henceforth include physical anthropology, history, and biology.<sup>112</sup> Taylor was one of the first Australian scientists to break free from the colonial bind of amassing empirical data for synthesis abroad. By the mid-1920s, Taylor was recognized as the chief theorist of the 'new geography.' Taylor furnished H.G. Wells with suggestions for the second edition of his *Outline of History*; the American climatologist Stephen Visser visited Taylor in Australia in 1921; and none other than

108 ANL, Edmund Leolin Piesse Papers, MS 882, Series 9, 882/9/26, Taylor to Piesse, 26 March 1929, Taylor was Honorary Secretary of the Round Table on International Relations, a sub-section of the Institute of Pacific Relations. Taylor's colleague at Cambridge and fellow 1851 Exhibition scholarship holder, T.H. Laby, then Professor of Physics at the University of Melbourne, was also a member of the Round Table. See ANL, Edmund Leolin Piesse Papers, 882/9/76, T.H. Laby to Piesse, 3 October 1935.

109 ANL, Edmund Leolin Piesse Papers, 882/9/33, draft memorandum by Piesse.

110 Taylor, 'Our Foreign Neighbours,' *The Australian Teacher* (November 1923), 16-18.

111 ANL, Griffith Taylor Papers, 1003/9/227, 'The Human Race -White Australia Aspect,' *Sydney Morning Herald*, 21 June 1923; Taylor, *Environment, Race and Migration*, 223; ANL, Griffith Taylor Papers, 1003/5/111, 'Race and Nation in Europe,' *The Australasian Journal of Psychology and Philosophy* 4, 1926; ANL, Edmund Leolin Piesse Papers, MS. 882, series 9, 882/9/33. The correspondence to and from Piesse displays a decisive shift between the late 1920s and the early 1930s. Asia was first viewed as an economic competitor and later as a military threat.

112 Mawson, 'Presidential Address,' Section E (geography and history), AAAS, 1921, 154-56; Taylor, *Our Evolving Civilization*, 76; SUA, Griffith Taylor Papers, Acc. 979, series 2, item 4, note by Taylor 14 May 1920; A.C. Haddon, 'Review of *Environment and Race*,' *Nature*, 121 (7 April 1928), 523-33. Taylor's correlation of plant, animal and human distribution was acclaimed by the prestigious *American Anthropologist*. See E.S. Craighill Handy, Bishop Museum, Honolulu, 'Review of *Environment and Race*,' October 1928.

Frederick Jackson Turner incorporated Taylor's concept of evolutionary adaptation as a series of concentric zones emanating from a focal centre into his revised work on the American frontier. In 1927, W.L.G. Joerg asked Taylor for recommendations for the Geographical Society's Pioneer Belts project,<sup>113</sup> and Taylor's work came to the attention of America's foremost geographers, Ellsworth Huntington and Isaiah Bowman. Huntington observed that Taylor's racial isopleths 'have set me to thinking as have those of few other geographers....' Taylor responded by saying that there was 'no one's good opinion he'd rather have on world problems.'<sup>114</sup>

His research on Australian settlement foreshadowed Bowman's *Frontiers of Settlement* series and it was a tribute to his scientific achievements that Bowman, the leading promoter of American professional geography, urged him to accept an offer from Harlan H. Barrows on 1 September 1928 of a professorship at the University of Chicago, where his international reputation would be immediately confirmed. In Bowman's view, Taylor's empiricism and theoretical grandeur would vault the Chicago department towards disciplinary rigour and independence: 'American geography at the present time needs a "great awakening" through attention to "real research problems" like those in physics and biology – facts are not the end.'<sup>115</sup> Edgeworth David interpreted Taylor's ascension to Chicago as irrefutable evidence of the end of victory of Australian science over colonial tutelage. You 'have the choicest of chairs in the world' he told his protégé and exhorted him to 'bring more light into the dark places.'<sup>116</sup>

### 3. The University of Chicago

Established in 1903, the Department of Geography at the University of Chicago was the first of its kind in the United States. Geography had developed as a field within the Department of Geology, under the direction of the outstanding

113 ANL, Griffith Taylor Papers, 1003/4/127/87C Taylor to H.G. Wells, 20 May 1920; Tomkins, 'Griffith Taylor and Canadian Geography,' 102; Robert H. Block, 'Frederick Jackson Turner and American Geography,' *Annals of the Association of American Geographers*, 70 (March 1980): 34-35. For his correspondence with Joerg, see Tomkins, 81. Taylor later contributed 'The Pioneer Belts of Australia' to W.L.G. Joerg (ed.), *Pioneer Settlement: Co-operative Studies by Twenty-Six Authors* (New York: American Geographical Society, 1932), 360-91.

114 ANL, Griffith Taylor Papers, 1003/4/127/2E2, Taylor to Huntington, 23 June 1920; Martin, *Ellsworth Huntington*, 198. Huntington asked Taylor to read his manuscript *The Character of Race* (New York: Charles Scribner's Sons, 1924) in which much of Taylor's climatic research was distilled.

115 ANL, Griffith Taylor Papers, 1003/9/976, Harlan H. Barrows to Taylor, 1 September 1928; 1003/9/964, Bowman to Taylor, 4 June 1928.

116 ANL, Griffith Taylor Papers, 1003/4/285, Edgeworth David to Taylor, 29 October 1928.

physiographer and climatologist T.C. Chamberlain. There, the idea of environmental control became the keystone of a new department of geography which was chaired between 1903 and 1919 by Chamberlain's protege Rollin D. Salisbury.<sup>117</sup> Harlan H. Barrows, who Huntington described as a 'patient and detailed worker,'<sup>118</sup> assumed Salisbury's mantle in 1919, and shifted the environmental control paradigm towards a more equally balanced relationship between organism and environment. Barrows was a great exponent of the concept of natural regions, expounded by the British geographer, Herbertson, and build a department around the study of the world's geographical areas. Wellington D. Jones taught Patagonia, Asia and India, Robert S. Platt studied Latin America and the northern lake regions of the United States, and Charles C. Colby taught the economic and urban geography of North America. Taylor was expected to fill a particular regional niche, defined by the polar regions and Australasia.<sup>119</sup>

Until Taylor's arrival in 1928, the department was best known for its textbooks. As Huntington informed Taylor, it was not 'distinguished scientifically' and 'your presence will help to give Chicago a scholarly character it now lacks.'<sup>120</sup> More than any geographer of his day, Taylor had demonstrated how the study of man's relationship with the environment had become the central feature of the new 'scientific' geography. Moreover, Taylor's interest in human evolution and distribution, his researches into environment and national development, and his background in geology and palaeontology gave him a generalist perspective which poised him to become the centrepiece of a department which would rival the achievements of political economy under Thorstein Veblen,

117 For background on the Chicago Department of Geography, see, William D. Pattison, 'Rollin Salisbury and the Establishment of Geography at the University of Chicago,' in Blouet, *The Origins of Academic Geography in the United States*, 155-160; Preston E. James, *All Possible Worlds: A History of Geographical Ideas* (Indianapolis: Odyssey Press, 1972); P.E. James and G.J. Martin, *The Association of American Geographers: The First Seventy-Five Years, 1904-77* (Washington, D.C.: Association of American Geographers, 1978). On his way to Cambridge in 1907 Taylor met T.C. Chamberlain and his son Rollin, who was later to become one of his closest friends at Chicago. See Taylor, *Journeyman Taylor*, 57.

118 ANL, Griffith Taylor Papers, 1003/9/161, Huntington to Taylor, 4 June 1928.

119 Chauncey D. Harris, 'Geography at Chicago in the 1930's and 1940's,' *Annals of the Association of American Geographer*, 69 (1979): 23-27. Taylor's polar studies were the most popular aspect of his teaching and lecturing at Chicago, and his first publication produced while at Chicago was 'Climate Relations Between Antarctica and Australia,' in *Problems of Polar Research: American Geographical Association Special Publication # 7* (New York: American Geographical Association, 1928). In the volume there were also contributions by Sir Douglas Mawson on exploration, Vilhjamur Stefansson on natural resources, Diamond Jenness on arctic ethnology, and John W. Harshberger on plant geography.

120 ANL, Griffith Taylor Papers, Huntington to Taylor, 4 June 1928.



sociology, led by Robert Park, and biology, with Henry C. Cowles.<sup>121</sup> Indeed, the founding human ecologist at Chicago, J. Paul Goode, saw sociology as 'the fruit and flower of geographic study.'<sup>122</sup> As the *University of Chicago Calendar for 1929-30* explained, geography 'is neither a natural science or a social science; its field lies between the domains of those subjects; its point of view is unique among the sciences which deal with the earth and with humanity.'<sup>123</sup> Chicago geography converged with Taylor's pragmatic view that scientific geography must engage with both society and politics, furnishing the 'cultured man and woman' with a broadened 'social outlook' and a reinvigorated sense of citizenship.<sup>124</sup>

Taylor's geographical interests, his environmentalist perspective, and his belief in using scientific data for government planning and social control, accorded well with the outlook laid down by President Robert Hutchins' 'Chicago Plan,' a scheme which promoted the techniques of objectivity as a bridge between the natural and social sciences. Taylor's interest in charting racial, cultural and linguistic patterns became joined to a variety of quantitative methods, including biometrics, econometrics and psychometrics, F. Stuart Chapin's 'social indices,' and J.B. Watson's 'behaviourism'.<sup>125</sup> Hutchins' policies had deleterious effects upon Chicago sociology, which by the late 1920s had become labelled as unscientific,<sup>126</sup> but was a distinct boon for geography. As Taylor wrote affectionately to Hutchins in 1934, he agreed whole-heartedly with the president's 'New Plan' to combine 'fact-finding' with 'deduction-finding'. Taylor was quick to add, on behalf of his own agenda, that 'the modern geographer has a very useful field as a "prophet" – which goes even beyond *your* desires, I fear.'<sup>127</sup> Moreover, the emphasis upon interdisci-

121 For the cooperative relationship of Chicago geography with the natural and social sciences see James and Martin, *The Association of American Geographers*, 25-33.

122 Quoted in James and Martin, *The Association of American Geographers*, 25. J Paul Goode first taught human ecology in 1907, see Geoffrey J. Martin, 'Paradigm Change: A Study in the History of Geography in the United States, 1892-1925,' *Organon*, 20 and 21 (1984/1985), 261-76.

123 Tomkins, 'Griffith Taylor and Canadian Geography,' 317-18.

124 *University of Chicago Calendar for 1929-30*, quoted in Tomkins, 'Griffith Taylor and Canadian Geography,' 313.

125 Martin Bulmer, 'Quantification and Chicago Social Science in the 1920's,' 323; Bannister, *Sociology and Scientism*, 142, 145-48; Dorothy Ross, 'American Social Science and the Idea of Progress,' in Thomas L. Haskell (ed.), *The Authority of Experts* (Bloomington: University of Indiana Press, 1984), 166-67.

126 Bulmer, *The Chicago School of Sociology*, 202-204.

127 University of Chicago Library, President's Papers, Taylor to President Hutchins, 5 January 1934. Geography was particularly important in Hutchins' eyes because it was uniquely poised between the physical and social sciences. See ANL, Griffith Taylor Papers, 1003/6/180, Taylor to Mater, undated letter, 1930.

plinary research, championed at Chicago during the 1920s and 1930s, was practically attested to by Taylor whose own geographical research epitomized the way in which the natural sciences could inform and enrich the social sciences.

Taylor grew critical of his department, picturing it as a haven of 'dog-kennels,' with very little scientific rigour, and, to his amusement, no tradition of geographical laboratory or fieldwork. Their conception of fieldwork, in Taylor's caustic phrase was to have students cruise around Chicago in cars 'plotting factories on maps.'<sup>128</sup> As a consequence, Taylor was drawn towards the anthropologists, sociologists, and the ecologists. Henry Cowles, the foremost plant geographer in the United States and Chairman of the Biology Department, shared his botany excursions with Taylor and became his closest intellectual friend at Chicago. In 1929, Taylor spoke to the Social Science Club at the invitation of Ellsworth Faris, the chairman of the Department of Sociology and Anthropology, and as Taylor recounted, Robert Redfield said 'he had never been so stimulated.' Robert Park was much impressed.<sup>129</sup> The editor of *Political Economy*, issued by the University, invited him to join a select group of scientists at a Round Table on population growth and international relations.<sup>130</sup> Dismissive of younger anthropologists who merely discussed how 'Indians make pots & why feathers are good for pictures,' and who failed to use their science 'to clean up problems of miscegenation,' Taylor met the anthropologists Edward Sapir, who shared his interest in language, and Cooper Cole, who was to include a chapter by Taylor in his edited anthology, *Human Origins*.<sup>131</sup>

Taylor's most important intellectual engagement at Chicago involved the study of human ecology. Ecology concerned the reciprocal relations of organisms with their environment. During the 1920s, this field had sought methods to oppose the hereditarianism which was gaining currency among Darwinian

128 ANL, Griffith Taylor Papers, 1003/5/165, Taylor to Mater, 8 June 1929. He was particularly critical of his chairman, Harlan Barrows who undertook no fieldwork.

129 ANL, Griffith Taylor Papers, 1003/5/165, Taylor to Mater, 9 March 1929; Taylor to Mater, 22 March 1929; 1003/5/19 Taylor to Mater & Pal, 2 February 1919; 1003/5/169, Taylor to Doris, 12 February 1919; 1003/5/168 Taylor to Doris, 18 February 1929; 1003/5/166 Taylor to Doris, 23 February 1919. On Cowles' death due to a stroke, see 1003/5/15, Taylor to Mick, 18 July 1933. Taylor was also critical of the political science and sociology professors noting that, although very friendly, they 'forgot to research.' See, UTL, Griffith Taylor Papers, MS 20, Box 22, 'Teaching of Geography.'

130 ANL, Griffith Taylor Papers, 1003/5/165, Taylor to Mater, 29 June 1929; Taylor to Mater, 9 March 1929; Taylor to Mater, 27 February 1929.

131 ANL, Griffith Taylor Papers, 1003/5/86, Taylor to Mater, 3 November 1933; Taylor, 'Geographers and World Peace: A Plea for Geopacifism,' *Australian Geographical Studies*, 1 (April 1963): 9. Interestingly Taylor's chapter on physical anthropology was deleted from the second edition of *Human Origins* in 1946 (Chicago: University of Chicago Press, 1936).

biologists.<sup>132</sup> As Barrington Moore argued, geography became the primary force behind human ecology because its animating scientific framework centred upon man's interaction with his environment.<sup>133</sup> One of the most famous leaders of the ecology movement in the United States, author of the influential *Textbook of Plant Ecology* (1922), Henry C. Cowles, began his career as a geographer studying landforms and from W.M. Davis' concept of 'ontography' developed the notion of correlating the distribution of plants with their evolution through time.<sup>134</sup> In fact, the phrase – 'human ecology' – was coined by the human geographer Ellsworth Huntington to distinguish geography from biology and zoology, for like his intellectual twin, Taylor, he had been influenced by the plant geographer J.S. Willis and the zoologist, W.D. Matthew. Huntington in turn became the founding President of the Ecological Society and at its first meeting in 1916 spoke on 'Climatic Change as a Factor in Organic Evolution' and co-founded the interdisciplinary journal *Ecology*.<sup>135</sup>

Although Robert Park declared that he had founded a new positivistic sociology when he introduced ecology to his colleagues in 1925,<sup>136</sup> eighteen years earlier in 1907, the geographer J. Paul Goode had quietly introduced a course in plant, animal and human ecology in the geography department. As David Stoddart has shown, this dramatically influenced the sociologists Robert Park, Ernest W. Burgess, and R.D. McKenzie. In 1922, Goode's successor, Harlan H. Barrows, a student of Frederick Jackson Turner at Wisconsin, was the first geographer to expound the view that human ecology was the keystone to making geography a distinctive discipline. Through its emphasis upon human adjustment to the environment geography would become the mother of all sciences and the unique study of man within his natural environment.<sup>137</sup> The

132 See Barrington Moore, 'The Scope of Ecology,' *Ecology*, 1 (1920): 3-4; Frank Collins Baker, 'Influence of a Changed Environment in the Formation of New Species and Varieties,' *Ecology*, 9 (1928): 271-283; G. E. Nichols, 'Plant Ecology,' *Ecology*, 9 (1928): 267-70. The journal *Ecology* was edited by Barrington Moore, but was inspired by the *Ecological Society*, both of which owed their foundation to the geographer Ellsworth Huntington. Taylor's works were reviewed in and he wrote for *Ecology*.

133 Moore, 'The Scope of Ecology,' 4.

134 Cowles continued to value the intersection of geography and biology, becoming one of the founding members of the Association of American Geographers and later its President in 1920. See Harris, 'Geography at Chicago in the 1930's and 1940's,' 21; Martin, 'Paradigm Change: A Study in the History of Geography in the United States, 1892-1925.' For Cowles' importance in the ecological movement in the United States, see Worster, *Nature's Economy*, 207.

135 Martin, *Ellsworth Huntington*, 58, 143. See also J.W. Redway, 'Human Ecology: Review of Ellsworth Huntington and Sumner W. Cushing, *Principles of Human Geography*,' *Ecology*, 2 (July 1921).

136 Ross, *The Origins of American Social Science*, 435-36.

137 Stoddart, 'Darwin's Influence on the Development of Geography in the United States, 1859-1914,' in Blouet, *The Origins of Academic Geography in the United States*, 285;

McGill University sociologist C.A. Dawson, whose definition of human ecology as the study of the spatial and temporal distribution of human beings bore a striking resemblance to Taylor's conflation of evolution and distribution in his zones and strata theory of human migration, drew a connection between the ecological movement and the practice of geography.<sup>138</sup>

Robert Park was at pains to differentiate his 'social mapping' from the study of human distributions addressed by geographers like Huntington and Bowman, and was anxious to demonstrate that sociology's claim to human ecology was prior to those of geography.<sup>139</sup> It is clear that Park attended the Pan-Pacific Conference in Tokyo in 1926 (which Griffith Taylor also attended), and if his publications from that period are any indication – entitled 'Our Racial Frontier' and 'Human Migration and the Marginal Man' – he incorporated Taylor's *Environment and Race* into his own studies of race and culture.<sup>140</sup> Whether or

Harlan H. Barrows, 'Geography as Human Ecology,' *Annals of the Association of American Geographers*, 13 (December 1922), 2-7.

138 C.A. Dawson, 'Human Ecology,' in L.L. Bernard, *The Fields and Methods of Sociology* (New York: Lang and Smith, 1934), 289. Dawson interestingly also linked human ecology with the work of the ethnographer A.C. Haddon and the anthropogeographer H. J. Fleure. Haddon and Fleure had each reviewed Taylor's *Environment and Race* and saw it as a generalist and evolutionary approach to the study of human distribution. In *The Science of Social Redemption* Shore notes the influence of geography upon human ecology, but wholly ignores the very closest geographical source, the department of geography within the University of Chicago, and has thereby left out the University's most important statement on the study of human ecology, that of Barrows in 1922. One of her figures R.D. McKenzie did mention the work of Barrows as well as Huntington, and Stephen S. Visher who wrote on 'Social Geography.' See R.D. McKenzie, 'The Field and Problems of Demography, Human Geography and Human Ecology,' in Bernard (ed.), *The Fields and Methods of Sociology*, *op.cit.* 52-66. This oversight has also characterized most of the secondary literature concerning the rise of Chicago sociology.

139 Robert Park utilized ecology as a prop to invest sociology with a scientific undergirding when it was losing its conceptual focus during the 1920s. Referring acerbically to the Park and E.W. Burgess 1921 textbook on sociology as 'this diabetic flatulence of sociologies,' Lewis Mumford criticized them for not applying human ecological principles already established by Patrick Geddes in Britain. See Mumford, 'Review of *An Introduction to the Science of Sociology*,' *The Sociological Review*, XIV (3 July 1922): 234-236. As the latest assessments of Chicago sociology by Kuklick, Bannister, Bulmer and Ross now make clear, there was no real consensus within Chicago sociology; rather than functioning as a coherent 'school' as the sociologists themselves maintained the department was undergoing a crisis of ideological ferment as its members searched for a central conceptual blueprint. See especially Kuklick, 'Boundary Maintenance in American Sociology: Limitations to Academic Professionalization,' 201-19. Bulmer, *The Chicago School of Sociology* has argued for a diversity of intellectual perspectives and argues forcefully against the 'myth' of a coherent school. Similarly Bannister's *Sociology and Scientism* has criticized the easy acceptance of Robert Park's social surveys as the *Leitmotif* of Chicago sociology. Ross splendidly describes the agonized search Park undertook to create a 'science' of sociology. See *The Origins of American Social Science*, especially Chapter 10, 'Scientism.'

140 On Park's attempts to employ human ecology in order to provide sociology with a scientific

not he read Taylor's work on racial distribution, it is significant that Park and Burgess' 'wave theory' of urban growth closely approximates W.D. Matthew's wave theory and Taylor's 'lava flow concept' of culture, while their concept of centre and periphery, of urban growth outwards along concentric circles of evolution bears an unmistakable resemblance to Taylor's zones and strata. Indeed, in his 1928 address to the BAAS, 'Correlations and Culture: A Study in Technique,' Taylor defined the evolution of the city of Chicago along zones of occupation and described its cultural growth in terms of overlapping lava flows which progressively pushed older traditions towards the periphery.<sup>141</sup>

Though less dramatically self-promoting, geography strategically influenced the development of sociology. Thus, the 'Chicago School' certainly was not the major progenitor of human ecology. Nor was it on the periphery; rather, it was but one among many centres, and occupied an intellectual zone co-equal with that of the University of Sydney. Moreover, sociology was but one of its social science manifestations. In 1935, Charles C. Adams concluded in an article in *Ecology* that human ecology had its origin in geography, but that it evolved in two distinct migrations - one towards racial distribution, with Huntington, Taylor, Roland Dixon, and W.Z. Ripley, and another which took as its focus the adjustment of social groups to their environment, defined by the sociology of Park, Burgess, McKenzie and the community studies of the Lynds.<sup>142</sup> Taylor was neither a parrot of Chicago's human ecological tradition, nor did he impose his own approach upon the social sciences. His environmentalist position dovetailed amicably with the established order within the University, and by offering ecology as a unifying concept, reinforced his notion of geography as the overarching science of human affairs. In turn, Chicago

conceptual framework, see J. Nicholas Entrikin, 'Robert Park's Human Ecology and Human Geography,' in *Annals of the Association of American Geographers*, 70 (March 1980), and especially 49-54 for the influence of geography upon Park. For a similar conclusion see Ross, *The Origins of American Social Science*, 436-38. These pages also contain a discussion of Park's racial ideas and his attendance at 'a conference' in 1926 where he met a Japanese. This could be none other than the Pan-Pacific Conference where racial interaction was a major theme. For Taylor's influence on Park, see Everett C. Hughes, et al. (eds), *Robert E. Park, Race and Culture, Collected Papers* (Glencoe, Ill.: The Free Press, 1950): 346. See also R.E. Park, 'Human Ecology,' *American Journal of Sociology*, XLII (July 1936).

141 UTL, Griffith Taylor Papers, MS 20, Box 23, 'Correlations and Culture: A Study in Technique,' Presidential Address, Section E, BAAS, 1928, 129.

142 Charles C. Adams, 'The Relation of General Ecology to Human Ecology,' *Ecology*, 16 (July 1935): 318-329. Roland Dixon was a physical anthropologist who wrote *The Racial History of Man* (New York: Scribners' and Sons, 1923). William Ripley was an American sociologist who wrote *The Races of Europe* (New York: Appleton and Co., 1899); Robert S. Lynd and Helen Merrell Lynd wrote the now famous community study, *Middletown: A Study in Contemporary American Culture* (New York: Harcourt Brace, 1929).

gave Taylor a seminal phrase – 'human ecology' – with which to more easily term his research on the correlations of human evolution and distribution.<sup>143</sup>

#### 4. University of Toronto

The University of Chicago provided the expansive and stimulating intellectual milieu which Taylor craved in Sydney; but, he observed, man is by nature conservative and had a natural 'dread of the unfamiliar.'<sup>144</sup> He found American society alien and un-British, and disliked the presence of a large black population which he both feared and vilified. He referred to his housekeeper as 'our coloured colossus.' Taylor also detested the violence and urban clamour of Chicago with its 'flimsy' weatherboard houses and its near total absence of gardens, while his grievance with the high cost of living was given force when he lost his money when his bank crashed of 1931.<sup>145</sup> Eventually, in 1935, Taylor grew restive, and decided to leave. He had come to Chicago to study the development of civilization in a 'new continent.' The idea of environmental control was still dominant, but with each passing year his colleagues shifted imperceptibly towards a concern for human culture and away from the objectivist models of natural science. And, although Taylor made a meagre attempt to investigate the marginal desert lands of California, in a general sense his environmental determinism was inappropriate to a country whose natural bounty constantly reaffirmed the possibilist emphasis upon individual choice as the dominant theme in human settlement.<sup>146</sup>

Taylor had always preferred to teach within the British Empire, and once he realized that Chicago would not be his launching pad to Oxford, he enthusiastically accepted an invitation from the University of Toronto to speak at the Canadian Institute in 1928 on the relationship between geography and nation-planning. His address was entitled 'Australian National Problems.' At the instigation of Harold Innis, then assistant professor of economic geography within the Department of Political Economy, Toronto had proposed the establishment of an independent department of geography. That spring, Innis spoke on 'Industrialism and Settlement in Western Canada' at the International Geographical Congress in Cambridge and while in Europe, went on a fact-find-

143 Taylor first used the new phrase 'human ecology' in 1930. See UTL, Griffith Taylor, MS 20, Box 23, 'Food and Population Problems on the Pacific Basin,' *Proceedings of the Institute of International Relations*, VI (1930).

144 UTL, Griffith Taylor Papers, MS 20, Box 21, 'The Ecological Basis of Anthropology,' 2.

145 ANL, Griffith Taylor Papers, 1003/5/166 Taylor to Doris, 23 February 1929; 1003/5/165 Taylor to Mater, 22 March 1929; SUA, Sir Edgeworth David Papers, 1/24, series 32, Box 43, Taylor to David, 30 July 1931.

146 Taylor, *Our Evolving Civilization*, IX; UTL, Griffith Taylor Papers, MS 20, Box 23, 'Comparison of American and Australian Deserts.' For the intellectual transformation of American geography during the 1930's, see Stoddart, *On Geography*, 230-37.

ing tour of geography departments in Britain and Germany. To assess the latest direction of geographical scholarship, and perhaps unearth a suitable candidate for Toronto, Innis spoke to H.J. Fleure the anthropogeographer, and to the doyen of American geography, Isaiah Bowman. He concluded in a letter to President Falconer of Toronto that the ideal candidate must have a background in geology, physiography, climatology, historical and economic geography, and plant and animal geography! Innis failed to uncover a young geographer with the necessary knowledge of Canada. As Innis stated, 'A successful geographer, more than in any other profession, must be rooted in the soil.'<sup>147</sup>

At the beginning of the academic year 1928-29, Falconer drew up a committee, including representatives of geology, anthropology, physics, history, and political economy. T.F. McIlwraith, in Anthropology, wanted a geographer of human migrations who would complement his courses which emphasized the role environment played in shaping human endeavour. George Smith, in History, wanted a human geographer writing in the tradition of Mackinder. E.J. Urwick, the chairman of Political Economy, desired a geographer with a bias towards economics. E.S. Moore, a geology graduate from Chicago, commented upon Taylor's recent appointment there, while W.S. Wallace underlined the strong relationship between history and geography within the Canadian national experience. He enclosed a diagram of the globe, indicating how geography intersected with the human and natural sciences, which had been cribbed from Taylor's 'The Realm of Geography' in his 1923 address to the BAAS on 'Geography and Australian National Problems.' Only W.A. Parks, of Geology, was a virulent opponent of a new department of geography, fearing that it would usurp physiography, one of geology's most popular courses.<sup>148</sup>

As the 'foster-father,' as Taylor later called him,<sup>149</sup> of the Department of Geography, Innis wrote a memorandum to Falconer, carefully detailing the

147 University of Toronto Archives(UTA), Sir Robert Falconer Papers, A67-0007, Box 118 'Geography,' Innis to Falconer, 30 July 1928.

148 UTA, Sir Robert Falconer Papers, A67-0007, Box 118, T.F. McIlwraith to Falconer, 1 November 1928; George M. Smith to Falconer, 5 November 1928; E.J. Urwick to Falconer, 5 November 1928; E.S. Moore to Falconer, 31 October 1928; W.S. Wallace to Falconer, 27 October 1928; W.A. Parks, 31 October 1928. For Parks' reasons for opposing geography see ANL, Griffith Taylor Papers, 1003/5/165, Taylor to Mater, n.d. The diagram from Wallace was identical to that by Taylor in 'Geography and National Problems,' AAAS, 1923. A revised version of Taylor's globe appears in *Environment, Race and Migration*, 460.

149 See letter from Taylor to his son Bill recounting the events of his send off party, on the day the former President and supporter of geography, H.J. Cody died. ANL, Griffith Taylor Papers, 1003/9 Box 5, Taylor to Bill, 28 April 1951. Colonel Grant-Suttee was also a champion of geography in Canada, 1003/9 Box 5, Taylor to Bill, 5 June 1929. In a letter to C.A. Ashley concerning the death of his dear friend Harold Innis, Taylor stated that Innis had been the major force behind his appointment, along with Cody and Grant-Suttee, and that Innis had been responsible for inducing Taylor to examine the philosophical side of

need for a geographer who combined physical and human geography, and who was familiar with ethnology, history, and the recent literature on plant and animal ecology. Most important, the geographer must be trained broadly so that he could immediately establish a department with authority to deal with government policies regarding Canadian settlement in the future.<sup>150</sup> Taylor met all of the characteristics of Innis' ideal geographer except that he was neither young nor Canadian; but during his visit he greatly impressed Innis with his energy and his ability to understand problems of Canadian frontier settlement. Innis wrote to Bowman a few months later that he no longer needed just a Canadian point of view, but favoured 'a new country point of view' like Taylor's.

Taylor was impressed with the University of Toronto. The city was 'fresh and free from factories & foreigners,' and he admired the University's architecture and the Royal Ontario Museum. Indeed, Taylor immediately felt at home when he recognized that the President's name was the same as that given to a peak in the Taylor Valley in the Antarctic by his Canadian sledge-mate (and loyal Toronto graduate) Charles 'Silas' Wright.<sup>151</sup> Taylor thought the future President, Henry Cody, to be 'very affable,' and was introduced to E.J. Urwick and Vincent Bladen from political economy, T.F. McIlwraith and Charles Trick Currelly from anthropology, and C.W.M. Hart, recently appointed sociologist and fellow graduate of Sydney University. Intellectually, Taylor found common ground. McIlwraith emphasized the role of environment in human evolution; Hart advocated Darwinian concepts to fortify anthropology, and favoured a scientific approach to sociology; Innis interpreted the Canadian economy in terms of the intersection of geography and history; the geologist A.P. Coleman shared Taylor's theories about climatic cycles and the ice ages, and, like him used W.D. Matthew, Edgeworth David, Ellsworth Huntington, A.R.C. Selwyn, and T.C. Chamberlain as authorities on geological succession.<sup>152</sup>

his discipline, and that he would never have written *Our Evolving Civilization* if it had not been for Innis' assistance. Apparently Taylor also got the idea for writing *Geography in the Twentieth Century* when, on a committee with Innis, he innocently queried Taylor about the philosophical underpinnings of geography. This story well illustrates the degree of Innis' intellectual authority as Taylor quickly undertook editing a volume on the philosophy of geography despite his own animadversions against the role of philosophy in modern learning.

150 UTA, Sir Robert Falconer Papers, A67-0007, Box 118, Innis 'Memorandum on a Department of Geography for the University of Toronto;' Innis to Bowman, 16 January 1929. Plant and animal ecology was well established at the University of Toronto both in the social and natural sciences. For example see letter from the fish biologist A.G. Huntsman to Innis, 14 January 1942, UTA, Harold Innis Papers, B75-0025. Also the Ecological Society of America met in Toronto in 1921, see Stephen A. Forbes, 'The Humanizing of Ecology,' *Ecology*, 3 (1922), 90.

151 ANL, Griffith Taylor Papers, 1003/5/165, Taylor to Mater. The other peaks were named after the geologist A.P. Coleman and J.C. McLennan, the physicist.

152 C.W. M. Hart, 'Social Evolution and Modern Anthropology,' in H.A. Innis, ed., *Essays in*



Highly critical of the absence of professional geography in Canada, Taylor adamantly insisted upon a separate department during 'a long walk with Innis in the pine woods north of Toronto.'<sup>153</sup> Innis became particularly well disposed towards him after Isaiah Bowman recommended him in 1929, and on the upper shores of Lake Iroquois, Taylor envisaged an opportunity to establish the second department of geography within the British Empire, founded upon principles of environmental determinism and human ecology. Although Taylor had what Bowman described as 'an outer fringe of lunacy,' he was a seasoned researcher on the settlement of new societies.<sup>154</sup> Innis praised him to President Falconer, who had a bias towards a British-trained faculty, by pointing to his education at Sydney and Cambridge, his international reputation, and his ardent imperialism. His studies of 'one young country of the British Empire' would be invaluable for research on frontier settlement in the Canadian north.<sup>155</sup> As a result, Falconer in his 1933 President's Report proposed an independent department of geography. This goal was reaffirmed in 1935 by his successor, President Cody, who was then also chairman of the Canadian National Committee of the International Geographical Union. Only the University's financial setbacks, brought about by the depression, slowed the progress of Taylor's appointment. After a seven-year struggle, it was finally confirmed in 1935.<sup>156</sup>

In many ways, the department Taylor created at Toronto was the fulfilment of the comprehensive and objective vision of scientific geography which he had conceived at Sydney. His 1940 Presidential Address to the American Associ-

Political Economy (Toronto: University of Toronto Press, 1938); Hart, 'Some Obstacles to a Scientific Sociology,' in C.W.M. Hart, ed., *Essays in Sociology* (Toronto: University of Toronto Press, 1940); A.P. Coleman, *Ice Ages: Recent and Ancient* (New York: Macmillan, 1926), 139-40, 143-44, 264.

- 153 ANL, Griffith Taylor Papers, 1003/6/146, Taylor to Doris, 30 April 1931; 1003/5/165 Taylor to Mater, undated letter. Taylor was also very impressed with the housing available. He later bought a house in Forest Hill, across from Upper Canada College, which was sold to them by a real estate developer by the name of Mrs. Creighton, described by the frenetic Taylor as 'the world's most energetic woman' and wife of a young historian. ANL, Griffith Taylor Papers, 1003/6/42, Taylor to Evan, 1 February 1936. 'It's the nicest house and surroundings of any of the faculty.'
- 154 UTA, Sir Robert Falconer Papers, Box 118, Bowman to Innis, 13 February 1929; Innis to Bowman, 16 January 1929; Harold A. Innis, 'Memorandum re: Griffith Taylor,' 25 March 1929.
- 155 UTA, Sir Robert Falconer Papers, A67-0007, Box 118, Bowman to Innis, 13 February 1929; Innis to Bowman, 16 January 1929; Harold A. Innis, 'Memorandum re: Griffith Taylor,' 25 March 1929; 'Memorandum on the Subject of Geography,' n.d., in which Innis was particularly interested in Taylor's knowledge of plant and animal geography.
- 156 See the series of letters between Innis and Taylor which describe Innis' unshakeable support for Taylor. ANL, 1003/6/72, Taylor to Innis, 17 November 1931; 1003/6/73, Innis to Taylor, 18 November 1931; 1003/6/74, Innis to Taylor, 25 June 1932; 1003/6/74, Innis to Taylor, 28 January 1935; 1003/6/74, Innis to Taylor, 2 February 1935.

ation of Geography, entitled 'Geography and Education for Citizen Responsibilities,' informed his audience that an uncompromising scientism was even more necessary to confirm order and objectivity than ever before. 'In these days of queer ideologies and freedom from canons, it should be all the more valuable that we in *our* discipline can chart our data, and make clear our problems, and in a sense prove our conclusions.'<sup>157</sup> Located alongside the Department of Political Economy, and with its laboratories carved out of the dining hall of the old McMaster University building, Taylor's new geography department would distinguish a University which, he proudly claimed was 'the largest in the Empire.'<sup>158</sup>

Taylor put into practice his belief that geography could achieve the status of a 'pure' science by rigorously applying the techniques of biology and geology to anthropology, history and sociology. Geography at Toronto became one huge laboratory for the study of ecological problems. As Innis outlined in his submission to the International Geographical Union in 1942, Taylor's courses became the highest expression of the union of the environmental and human sciences. His Economic Geography comprised the economic ecology of all seven continents; the 'ecological problems of race, nation, language, and religion' were taught in a Cultural Geography pass course, and there was a course on the 'Ecology of World Resources,' in addition to more standard specialties of climatology and the geography of pioneer lands.<sup>159</sup> In Taylor's view, geography had at last become the leading science of modern citizenship, where the material world defined mental and spiritual values.

157 UTL, MS 20, Box 21, 'Geography and Education for Citizen Responsibility,' Presidential Address to the American Association of Geography. The war provided Taylor ample opportunity to demonstrate the practical usefulness of geography. As in World War I, he lectured to the Officer's Training School in Toronto. See UTL, Griffith Taylor Papers, MS 20, Box 21, 'Cultural Geography along the Rome-Berlin Axis,' *Canadian Geographical Journal*, 10 (June 1940): 287-301. J.B. Tyrell, a geologist with the Canadian Geological Survey, A.P. Coleman, Professor of Geography, University of Toronto, Charles Camsell, Director of the Geological Survey of Canada, the historians Lawrence Burpee and O.D. Skelton, the anthropologist Marius Barbeau, and Griffith Taylor made up the Board of Directors of *The Canadian Geographical Journal*. Along with President Cody, the historian Donald Creighton, and the political scientist Alexander Brady, Taylor gave a series of lectures at the University of Toronto, 11-17 June 1944, 'An Introduction to Canada for Members of the British, Australian, New Zealand and United States Forces,' as part of the Canadian Legion Educational Series. See ANL, Griffith Taylor Papers, 1003/9, Box 5.

158 ANL, Griffith Taylor Papers, 1003/6/286, Taylor to Fawcett, 3 July 1947.

159 UTA, Harold A. Innis Papers, B72-0025, Box 2, 'International Geographical Union,' National Committee of Canada, Memo No. 87, 20 February 1942. Taylor explained the way in which ecological problems could be expanded at the University of Toronto to include history, ethnology and human culture in general. See UTL, Griffith Taylor Papers, MS 20, Box 21, 'Geography at the University of Toronto,' 2; 'Geography and Education for Citizen Responsibilities,' 4, 14-15. See also President Cody, *Annual Report of the President for the Year Ending June 30, 1936* (Toronto: University of Toronto Press, 1936), 12.

The experience of World War II was instrumental in deploying the expertise of geographers like Taylor in searching for technocratic solutions to problems of national planning. In 1942, Taylor concluded that geography was 'working right on the battle front in man's progress towards a higher type of civilization' by virtue of the fact that it was the only science which had escaped the esoteric concerns of the laboratory. It had become a social science using its data in a socially responsible fashion on behalf of the efficient prosecution of the struggle against the 'forces of reaction.'<sup>160</sup> Because geography was showing its usefulness in the 'present world-crisis,' Taylor believed it had conquered the economic and cultural fields. In 1949 he gleefully reported on the state of his geography empire at Toronto. The best sociology and philosophy students, he claimed, had succumbed to the universality of human ecology, which would soon overtake history.<sup>161</sup>

## 5. Technocratic Geography in Canada

Hitler's policies of expansion were based on the heartland thesis, first advanced by Halford Mackinder, and upon the environmental determinism of the nineteenth-century German geographer, Friedrich Ratzel. However, World War II gave Taylor an opportunity rarely conferred upon any geographer, for it confirmed his prediction that Hitler's world order, and its popular obsession with racial purity and the 'Nordic Myth,' would founder. Hitler became the perfect foil for Taylor's racial theories. Once the public understood racial classification, cultural distinctions – the 'fault-line' upon which wars erupted – would be eradicated. Concepts such as Aryan (based upon language) and German (based upon culture) were man-made, ephemeral factors in the long history of human evolution; and that their nation, like all the other 'most progressive' nations, was created by generations of racial intermixture, they would not have vilified the Jews, their fellow Alpines. If any group were to be expelled from Germany, Taylor contended, it should have been the southern Germans who belonged to the less highly evolved Mediterranean type.<sup>162</sup> For

160 UTL, Griffith Taylor Papers, MS 20, Box 21, 'Geography and Education for Citizen Responsibilities,' 3, 17.

161 ANL, Griffith Taylor Papers, 1003/9 Box 5, Taylor to Bill, 7 October 1949; UTL, Griffith Taylor Papers, MS 20, Box 23, 'Environment and Nation,' *American Journal of Sociology*, XL (July 1934): 21-33; 'Environment, Village and City: A Genetic Approach to Urban Geography,' *Annals of the Association of American Geographers*, 32 (1942): 47-59. In 'Geographers and World Peace: A Plea for Geopacifism,' *Australian Geographical Studies*, 1 (1963): 3-17, Taylor argued that by becoming a liaison between the sciences and humanities, and by providing solutions to world problems, it should be honoured as much as history.

162 UTL, Griffith Taylor Papers, MS 20, Box 21, 'Aryan, German, Nordic, Jew,' *University of Chicago Magazine*, November 1935, 5-10. Taylor gave President Cody a copy of this article with the inscription: 'A Dead Dog can float *with* the tide, but it takes a live man to advance against it.' See UTA, President H.J. Cody Papers, A68-0006, Taylor to Cody, 27

Taylor, Switzerland represented the ideal example of how, over time, the overwhelming influence of a shared Alpine environment welded peoples together into racial harmony. Similarly, he concluded, rather optimistically, that one day the old Austrian Empire would be reconstituted as one nation, because its linguistic and cultural difficulties presented no real challenge to the unifying impetus of its racial conformity.<sup>163</sup>

Race, he argued, was moulded by environment. What determines nationality, Taylor asked? 'Given a more or less uniform environment – separated by some fairly well-marked natural features from adjacent regions – and in time a nation will develop from most diverse peoples. Environment, time and goodwill are more important than race, language or religion in welding the members of a successful national group.'<sup>164</sup> In *Environment and Nation*, Taylor sought to reinterpret European history through this objective ecological lens.<sup>165</sup> Inspired in part by Bowman's *New World* (1928), which argued that the Treaty of Versailles would not ensure stability in Europe unless the boundaries of nation-states conformed to natural boundaries, Taylor suggested that nation-making in Europe from the time of Charlemagne to the end of World War I represented the unfolding of a natural law. National continuity was due not to human choice but to the unalterable mechanisms of environment and climate: European history evolved by a series of stages beginning with simple, leaderless tribal groups, to larger feudal groups unified by dictatorship, to full-fledged nations, with self-government founded upon a geographically determined racial and cultural consensus.<sup>166</sup>

Although he took the evolution of nation-states as the central theme in his later work, Taylor was a virulent opponent of nationalism, and believed that like all other organisms, nations would either wither away, or else mutate into better adapted forms. For Taylor the apex of human evolution was the 'world-state,' in which human societies would perfectly mirror the geomorphology of the earth, whose continents rested upon a unified and symmetrical geological

November 1935. See also, 'The Geographer's Aid in Nation Planning,' 23; Taylor, *European Cultural Geography* (Ottawa: Canadian Legion, 1944), 30. On the cover of this pamphlet Taylor noted: 'This is the best approach to *Human Relations* as boosted by P. Minister Drew.'

163 Taylor, *Environment, Race and Migration*, 184.

164 UTL, Griffith Taylor Papers, MS 20, Box 22, 'Race and Nation in Europe,' *The Australasian Journal of Psychology and Philosophy*, IV (March 1926), 4.

165 ANL, Griffith Taylor Papers, 1003/6/346, Taylor to Frank Debenham, 24 January 1948. This letter was an angry rejoinder to a caustic review of *Environment and Nation* penned by his former sledge-mate, Frank Debenham, professor of geography at Cambridge University, where environmental determinism had long been buried as a useful coordinating framework for geography.

166 Taylor, *Environment, Race and Migration*, 22, 28, 184; UTL, Griffith Taylor Papers, MS 20, Box 23, 'Environment and Nation,' 21.

structure. Ultimately, all the races would become amalgamated into one gigantic 'web of civilization.'<sup>167</sup>

Taylor's colleague, George Tatham referred to him as a liberal idealist in the matter of international affairs, because Taylor described himself as a pacifist and Fabian socialist, and claimed that his brand of 'geopacifism' valued freedom and humanity against the totalitarianism of Haushofer's 'geo-politik.'<sup>168</sup> But Taylor's vision of 'enlightened socialism,' and his ideal of a future 'brotherhood of man,' was anything but liberal. For it was grounded in fear of a world struggling over diminishing natural resources. And if objective geography was to achieve political authority, it must address the real 'fringe of settlement,' where so-called 'backward races,' namely the blacks and coloureds, had increasing aspirations, and aimed to enter the world racial struggle for control of land and resources.<sup>169</sup> When the birth-rate was lowest among the white civilizations and highest among the black, even biological control through eugenicist policies could not alter the Malthusian trajectory. In Taylor's estimation, as the world drew closer to population saturation, the only way to ensure that white civilization continued its control was to utilize the 'science of settlement' to provide efficient state planning of resources and industry. The very 'struggle for survival' of the western world depended upon the expertise of the research geographer.<sup>170</sup>

And it depended upon human moral courage, for victory would go to the thrifty, and sober,<sup>171</sup> and to those who had called upon religion.<sup>172</sup>

The experience of living in a relatively new nation defined by climatic extremes and comprising vast areas of unsettled and marginal land reinvigorated Taylor's environmental determinism. While his ideas were on the wane in the United States, Harold Innis and A.R.M. Lower provided striking evidence of

167 Taylor, *Environment, Race and Migration*, 3, 7, 49, 457; Taylor, *Australia*, 15; Taylor, *Canada's Role in Geopolitics*, 27. See also Taylor's marginalia in his copy of Bowman's 'The Pioneer Fringe,' 18-20.

168 See Tomkins, 'Griffith Taylor and Canadian Geography,' 481; UTL. Griffith Taylor Papers, MS 20, Box 21, 'Geopacifism,' Australian Broadcasting Company, Melbourne, 22 April 1948, 2-3. Taylor quoted Albert Einstein on international brotherhood versus nationalism in 'Geographers and World Peace: A Plea for Geopacifism,' *Australian Geographical Studies*, I (April 1963), 15. Einstein had also sent Taylor his pamphlets on world peace, see ANL, Griffith Taylor Papers.

169 Taylor, *Environment, Race and Migration*, 3.

170 Taylor, 'The Distribution Of Future White Settlement,' *Geographical Review*, 12 (July 1922), 67-74

171 Taylor, *Environment Race and Migration*, 457.

172 ANL, Griffith Taylor Papers, 1003/9 Box 5, Taylor to Sir Charles Wright, 18 January 1951. Perhaps because of his own advancing age, Taylor even placed religion ahead of his own objectivist cultural geography as the primary vehicle for world peace.

the interplay of geography and human settlement, and inspired Taylor to expand his environmentalist perspective. Three large volumes followed. *Environment, Race and Migration* (1937) reiterated his earlier synthesis of racial distribution, with a stronger emphasis upon ecological principles. Already the influence of Innis' geographical interpretation of Canadian history as presented in *The Fur Trade in Canada* (1930) was evident: 'The intimate relationship between structure, geography and history,' wrote Taylor, 'is nowhere better illustrated than in the earliest industry in Canada.' In the second major volume, *Environment and Nation* (1936) presented a radical materialist reinterpretation of nationalism in Europe, and argued against free will by asserting that nations were defined wholly by race and language, controlled by climate and environment.

In the following decade, Taylor reworked the Messenger Lectures which he gave at Cornell University in 1944 into his grandest work, *Our Evolving Civilization* (1946). In this, he broadened his environmentalist analysis to explain not only urban growth, but nothing less than 'the gradual changes in human conditions which characterize an advancing civilization.'<sup>173</sup> Although by the mid-1930's, Taylor incorporated human culture in addition to environment as one of the mechanisms of evolution<sup>174</sup> – perhaps in deference to Innis' growing concern with the role that human technology played in the development of natural resources – he expounded his theory of 'environmental control' with a vehemence that attested to its increasing marginality. Taylor desperately attempted to buttress his extreme determinism by turning to history. Ultimately, he resorted to defending his environmentalism against the resurgent possibilist school based on the most subjective evidence of all, personal experience. He was a determinist, he said, 'no doubt primarily owing to my experience in pioneer countries like Australia and Canada, where the possibilities offered by Nature to Man are more meagre than in Britain or the United States'<sup>175</sup> Even against growing empirical evidence which demonstrated that even in 'sterile' environments – such as parts of Denmark – scientific agriculture was altering the natural landscape to allow for human settlement, Taylor

173 Taylor, *Our Evolving Civilization*, vii.

174 Taylor, *Our Evolving Civilization*, 53; Taylor, *Environment, Race and Migration*, 251. It is interesting that Huntington stated in his comments on Taylor's work on Newfoundland, that he was moving towards a combination of hereditarian, environmental and cultural factors in human evolution. See ANL, Griffith Taylor Papers, 1003/9 Box 5, Huntington to Taylor, 11 September 1945.

175 UTL, Griffith Taylor Papers, MS 20, Box 23, 'Correlations and Culture: A Study in Technique,' Taylor, *Our Evolving Civilization*, 3; Taylor, *Geography in the Twentieth Century* (New York: Philosophical Library, 1949), 6, where he notes his former colleague, Robert S. Platt's denunciation of the environmentalist school, in 'Environment versus Geography,' *American Journal of Sociology*, 53 (1948), 351-58. In fact, Platt had sent him a copy of this address, just to rub salt in the wound.

continued to contend that 'man is not a free agent.' Even in areas favoured by abundant natural resources, such as British Columbia, Taylor argued that there was conclusive evidence for 'environmental control.'<sup>176</sup> As he wrote to his Toronto colleague, George Tatham, a professed possibilist, those who have applied fertilizers to the prairies 'have merely pushed ahead in Nature's plan for their terrain. Even when their example is followed in other similar parts of the world it will only indicate that man has advanced one more stage in *adjustment to the limits* laid down by Nature.'<sup>177</sup> This was undoubtedly an exercise in mental gymnastics and Taylor's retreat into subjectivity signalled the failure of Innis' attempt to build an objective geographical social science.<sup>178</sup>

In contrast to his public image in Australia, Taylor's beliefs about the possibilities of settlement in Canada's northern frontier were regularly extolled in Toronto's newspapers. Taylor did not diverge from his technocratic vision that it was the duty of the trained geographer to 'interpret the program of nature;'<sup>179</sup> but his prognostications for Canada's future were more optimistic and his vision of developing the North as a new agricultural and mining frontier converged with post-war interest of both Canadian scientists and politicians – a consensus later invoked in Prime Minister John Diefenbaker's 'Northern Vision.' While in post-World War I Australia, scientific geography had foundered before the exigencies of a dry and hot climate, the Canadian public accepted the geographer's role as demonstrating how 'the plans of national progress' must accord with 'the indications of nature.' Taylor told Canadians that civilization, being wholly a question of environment, was steadily advancing poleward, and that the most favourable site for a truly advanced culture was near the isotherm 50 which ran through Winnipeg, Montreal and Petrograd. Canadians might look forward to settlement well above 50 degrees latitude, and to a future population exceeding 100 million.<sup>180</sup> The 'wedge' of land above Winnipeg, Saskatoon, and Edmonton up to the muskeg could easily become a new agricultural hub – a 'potato-pasture[sic] zone' of development.<sup>181</sup> In an article, enthusi-

176 Taylor, 'British Columbia: A Study in Topographic Control,' *Geographical Review*, 32 (1942), 373.

177 ANL, Griffith Taylor Papers, 1003/6/423, Taylor to George Tatham, 5 August 1948.

178 UTA, Sir Robert Falconer Papers, A67-007, Box 118, Innis, 'Memorandum on a Department of Geography for the University of Toronto.'

179 ANL, Griffith Taylor Papers, Taylor to Tatham, 5 August 1948; Taylor, *Environment, Race and Nation*, 360; UTL, Griffith Taylor Papers, MS 20, Box 21, 'The Geographer's Aid in Nation-Planning,' BAAS, September 1931; Box 23, 'Environment, Village and City: A Genetic Approach to Urban Geography,' 3.

180 Taylor, *Our Evolving Civilization*, 41-42; Taylor, *Canada's Role in Geopolitics: A Study in Situation and Status* (Toronto: Ryerson Press, 1942).

181 Taylor, 'The Evolution and Distribution of Race, Culture and Language,' *Geographical Review*, 2 (1921): 98; UTL, Griffith Taylor Papers, MS 20, Box 23, 'Future Population in

astically republished by the Alberta government, Taylor argued that if Alberta with its oil and coal resources set about making the Mackenzie Basin into a new agricultural region, it would soon become the industrial and financial centre of Canada, and rival London as the political centre of the British Empire.<sup>182</sup>

However, after a decade of economic depression, when the forces of nature had unmercifully picked out 'unfavourable types'<sup>183</sup> in the dust-bowl of southern Alberta and Saskatchewan, the Canadian environment was perceived as vengeful and antagonistic to both individual morality and national ideals. Taylor's optimistic geography promised a future in which the human collective would live in harmony with the natural contours of the Canadian environment. For Taylor, nature was brutal, mysterious, and controlling, but it could be tamed once the expert geographer had understood its inner design.

In a newspaper article entitled, 'Famous Geographer Says that Some Future Day the Prairies Will be Well Treed,' one journalist quoted Taylor as saying that, with the Indian Head reforestation project the government had 'anticipated Nature,' and that if geographers were hired by the government to study the 'anatomy' of prairie towns, they, too, could progress along lines established by the hidden yet efficient laws of evolution.<sup>184</sup> Taylor argued that the Canadian government should follow the American example, where fifteen geographers from the University of Chicago had provided expert advice to the Tennessee Valley Authority. Indeed, Taylor's view that efficient planning must not be rooted in guidelines offered by the humanities, but founded upon the forward-looking guidelines of modern geography, migrated back to Chicago. Donald Innis, the son of Harold Innis and former geography student of Taylor, had written a doctoral dissertation under Carl Sauer entitled 'Human Ecology in Jamaica,' and in 1948 was teaching in the Program of Education and Research Planning at Chicago where, reportedly, Rexford Tugwell was using Taylor's *Our Evolving Civilization* as the text in his planning course.<sup>185</sup> In

Canada: A Study in Technique,' *Economic Geography*, 22 (January 1946), 67-74; 'Parallels in Soviet and Canadian Settlement,' 157; Taylor, *Canada's Role in Geopolitics*, 7-10.

182 UTL, Griffith Taylor Papers, MS 20, Box 21, 'Canada: 100 Years from Now,' *Chatelaine*, February 1945.

183 Taylor, *Environment, Race and Nation*, 53, 154.

184 UTL, Griffith Taylor Papers, MS 20, Box 22, newspaper clipping, 'Famous Geographer Says that Some Future Day the Prairies Will be Well Treed.'

185 In a letter to Taylor, Donald Innis, who still preferred Innis and Taylor's idea that planning depended upon the environment to Sauer's insistence on cultural factors, enthusiastically related to Taylor that he would 'have an excellent chance to discuss your ideas with the Planning students.' ANL, Griffith Taylor Papers, 1003/6/464, Donald Innis to Taylor, 28 November 1948. For Tugwell's views on the role of the social sciences in transforming society see, Ross *The Origins of American Social Science*, 399.



Canada, Taylor argued that the scientific principles of geography could be profitably utilized by the military, in diplomacy, resource development, town planning, for efficient settlement of the north, and in social planning.<sup>186</sup> His admonitions did not go unheeded, for in 1947 the federal government established a Bureau of Geography.<sup>187</sup>

With wondrous political naivete and unabated scientism, Taylor instructed Canadian officials to look to the example of Russia whose own 'pioneer fringe,' Siberia, had been efficiently developed into an agricultural and industrial hinterland in just twenty years thanks to the progressive principles of scientific management!<sup>188</sup> By the mid-1940s, Taylor insisted that Canada's new frontier, the north, had to be measured and analyzed by experts like himself so that its stage of development could be determined and its future progress plotted. Just outside Whitehorse, Taylor met his 'co-investigator from McGill,' the sociologist C.A. Dawson, who had written for Bowman's 'Frontiers of Settlement' project. Like Taylor, Dawson had turned towards the northern frontier, an as yet uncharted landscape ripe for social investigation, in the belief that an objective social science built upon evolutionary principles formed an invincible blueprint for the efficient development of this new 'pioneer belt.' In 1945, their conclusions were published in *The New North-West*, edited by C.A. Dawson, a testament to the way in which the scientific method was called upon to rediscover the frontier spirit. Ultimately, Taylor hoped that experimental research stations and Siberian models of settlement would instil in Canadians 'a belief in the north.'<sup>189</sup> In the twilight of his career, Taylor rediscovered in the Canadian north what he had felt before only in Antarctica – 'the joy of a real return to the primitive,' the confidence found in strenuous physical effort, and the assurance of recognition – values which were regrettably absent in modern life.<sup>190</sup>

Partly at the instigation of Harold Innis, Taylor was persuaded upon arrival at Toronto in 1935 that the social sciences were on the cusp of an era of expansion. Until the 1940s, he remained unaware of the deeply entrenched conservatism

186 UTL, Griffith Taylor Papers, MS 20, Box 21, 'Geography at the University of Toronto,' 3.

187 ANL, Griffith Taylor Papers, 1003/6/315 Taylor to Neville R. Wills, Department of Economics, Sydney University, 12 December 1947.

188 UTL, Griffith Taylor Papers, MS 20, Box 23, 'Parallels in Soviet and Canadian Settlement,' *International Journal*, 1 (February 1946): 157-58. Despite Taylor's experiences in Australia this article demonstrates his political naivete and the unabated narrowness of his objectivist stance.

189 See, Griffith Taylor, 'Arctic Survey IV: A Yukon Domesday: 1944,' *Canadian Journal of Economics and Political Science* 11, August 1945. On Dawson, see ANL, Griffith Taylor Papers, 1003/6/192, Taylor to Doris, July, 1944; 1003/6/189, Taylor to Doris, undated letter, 1944.

190 SUA, Griffith Taylor Papers, Acc. 979, series 4, item 3, 'With Scott: The Silver Lining.'

lurking within the various colleges, departments and quadrangles of that venerable institution. Under President Cody's leadership, these forces were temporarily stilled by his personal appeal for a harmonious relationship between the sciences and the humanities; but they were resurrected under Sidney Smith's tenure as President after 1945.<sup>191</sup> Taylor had long deplored the degenerative impact of accepted customs. Tradition was but a prejudice, and 'authoritative conservatism' was better suited to the mediocre, just as 'intellectual liberalism' was the natural expression of modern scientific thought.<sup>192</sup> As Taylor confessed to his friend, Sir Douglas Mawson at the University of Adelaide, now that he was 'tackling history' in his attempt to place geography at the apex of modern education, he was having trouble driving off the enemy.<sup>193</sup> He had come under extreme attack from *The Canadian Historical Review* when one outraged historian claimed that peoples could not be plotted on a graph like rainfall, nor could their societies be compared to geological strata.<sup>194</sup> In a series of letters to colleagues and family in Australia, Taylor fumed about what he considered Toronto's rapid decline into conservatism. He lashed out against 'the boneheads in the Senate' who made music but not geography a matriculation subject; he was enraged when the conservative W.P.M. Kennedy, professor of law, and the classicist C.B. Sissons blocked the proposal of his friend Harry Cassidy for a master's degree in social work; and he was nearly apoplectic when he discovered that a little book on 'a local educator' by the detested Sissons had received more recognition than his monograph on Canada.<sup>195</sup>

Taylor dogmatically defended his position that because of its objective methods, geography must rank ahead of the humanities in solving modern problems. These no longer revolved around ethical issues, but around the question of which nations would control the world's natural resources.<sup>196</sup> It was the greatest of ironies that just as he was battling against the entrenched humanities at Toronto, he was invited on a speaking tour of Australian universities where

191 William C. White, *Canon Cody of St. Paul's Church* (Toronto: The Ryerson Press, 1953), 182.

192 Taylor, *Journeyman Taylor*, 187; Taylor, 'The Evolution and Distribution of Race, Culture and Language,' 115; UTL, Griffith Taylor Papers, MS 20, Box 21, 'Geography at the University of Toronto,' 3.

193 ANL, 1003/6/196, Taylor to Mawson, 12 January 1944.

194 J.O.M. Brock, 'Review of *Environment and Nation*,' *Canadian Historical Review* 18 (March 1937), 70.

195 ANL, Griffith Taylor Papers, 1003/9 Box 5, Taylor to Evan, 11 January 1947; 1003/9 Box 5, Taylor to Evan, 14 December 1947; 1003/6/354, Taylor to Charles Wright, undated letter. See also Taylor, *Canada: A Study of Cool Continental Environments and their Effect on British and French Settlement* (London: Methuen, 1947).

196 ANL, Griffith Taylor Papers, 1003/6/271, Taylor to Professor Van Valkenburg, 15 June 1947.

his geographical ideas had been fully vindicated. In a stormy note to Professor Mills, the economist at the University of Sydney, Taylor complained that 'all our reverend leaders in this University deplore the stress on Physical Sciences, and want more humanities to improve world conditions.' For Taylor, ecology was the key to combating the 'mystical theorising' of the philosopher, classicist, or historian.<sup>197</sup> 'In settlement, race, cities, nations and linguistics,' he wrote the Registrar of the future Australian National University, 'we gain a great deal if we plot our distributions. Following Matthew – the biologist – I believe that ecology (geographical distribution) often enables us to decide which is the real explanation on many vexed questions.'<sup>198</sup>

Not only did President Sidney Smith, a lawyer by training, champion the humanities as the predominant intellectual vehicles for the preservation of international freedom, but even the social scientists were drifting away from the tenets of objectivity towards a renewed concern for the ethical dimensions of modern education. Innis was invited to speak at Chicago, where a similar struggle ensued between the humanists and the scientists, on 'the relationship of ethics to social science' at a symposium organized by the Committee of Social Thought.<sup>199</sup> As Carl Berger has argued, by the 1940s, Innis was coming to appreciate the limitations which militated against a purified 'objectivity' as his interests were shifting towards the philosophy of the social sciences.<sup>200</sup> Innis campaigned against specialization in the social sciences and sought a more holistic pursuit of truth through 'philosophical integrity' in order to uphold the validity of liberal education.<sup>201</sup> It was not insignificant that he desired a new Director of Social Work who possessed 'a deep and broad social philosophy,' one which conflated the inert rationalism then fashionable within each social science discipline with the activist and practical considerations of social reform.<sup>202</sup> E.J. Urwick might well have been referring to Taylor when he wrote Innis in 1944 complaining of the 'violent dogmatism' which gripped social scientists who exalted 'the rationalist scientific approach' at the expense of a philosophical understanding of the importance of values in modern life.

197 ANL, 1003/6/315, Taylor to Mills, 29 November 1947; 1003/6/271 Taylor to Van Valkenburg, 15 June 1947.

198 ANL, 1003/6/343, Taylor to Mr. Osborne, Registrar, University of Canberra, 17 January 1948. Taylor had been invited to Australia largely to offer advice on the social sciences for what would become the Australian National University.

199 UTA, Harold Adams Innis Papers, B75-0025, J.U. Nef, Department of Economics, University of Chicago to Innis, 2 July 1941. On the conflicts between empiricism and morality, see Frank B. Knight to Innis, 17 May 1944; Bannister, *Sociology and Scientism*, 223.

200 Berger, *The Writing of Canadian History*, 105-06.

201 UTA, Harold Adams Innis Papers, B75-0025, Lower to Innis, 28 February 1944; Innis to MacIver, 28 April 1944; Urwick to Innis, 30 December 1942.

202 UTA, Harold Adams Innis Papers, Innis to MacIver, 28 April 1944.

'Like you, I care more for the ultimate values than for any of the intermediate ones ... what is felt is more potent than what is grasped by the reason.'<sup>203</sup> One solution to the impasse was suggested by Dugald C. Jackson who contended that although the biological and natural sciences influenced the new social sciences, these must be redivided, and disciplines such as sociology and economics must be returned to their rightful place among the humanities.<sup>204</sup>

By the end of the 1940s, fearing that as the social sciences fell from favour within the University of Toronto, so geography might become trapped within the humanities, Taylor progressively retreated from his conception of geography as a discipline defined by the natural sciences, and one whose universalist perspective made it the steward of the human sciences. In his volume on the philosophy of geography, written at Innis' request, and in asking Innis to write a chapter underscoring 'the effect of political and man-made regulations' upon the natural environment, Taylor made a valiant attempt to bow to the new temper among the social sciences. However, after 1947 and just prior to his retirement in 1951, Taylor took refuge in the firmament of the physical sciences,<sup>205</sup> the beginning of his intellectual wanderings.

## Conclusion

In ecological terms, Taylor's belief that geography would eventually displace the humanities by objectively studying the interaction of mankind and the environment, never found a stable niche either in Australia or Canada. However, Taylor's program for a 'science of settlement,' designed to solve the problems of human distribution in areas such as the desolate Canadian north or the arid Australian interior, found fuller expression in these new societies than in Chicago, where local geographical factors furnished incontrovertible evidence for mankind's dominance over the environment. However, Taylor's career as a geographer well illustrates the way in which science is mediated and structured by its social and cultural context. All of Taylor's major geographical conclusions had been reached in Australia by 1927 when he published *Environment and Race* and his belief that human culture and society was the function of geographical determinants, was

203 UTA, Harold Adams Innis Papers, B75-0025, Urwick to Innis, 24 April 1944; Urwick to Innis, 24 September 1940.

204 UTA, Harold Adams Innis Papers, B75-0025, Dugald C. Jackson to Innis, 20 November 1940.

205 ANL, Griffith Taylor Papers, 1003/6/20, Taylor to Mills, 27 May 1947; 1003/9 Box 5, 'Department of Geography,' n.d.; 1003/9 Box 5, Taylor to Gladys Wrigley, American Geographical Society, 14 March 1949. The most poignant indicator of the increasing marginality of Taylor and Huntington's environmental determinism is a letter from Huntington to Taylor, 1003/6/217, 9 September 1946: 'There are so few of us who have similar ideas about geography that we ought to keep closely in touch with one another.'

transplanted to Canada, another white settlement society where history was the function of geographical limitations. The University of Toronto did not modify Taylor's determinism nor did it furnish him with any new geographical insights; rather, it served as a *tabula rasa* for his already matured ecological perspective. In both Australia and Canada, Taylor's promotion of geography as an objective basis for forecasting the direction of modern civilization was circumscribed by the very subjective and conservative forces Taylor so forcefully wished to expurgate.

In Australia, the power of national myths, especially the belief in 'White Australia' and unrestrained agricultural expansion, challenged Taylor's technocratic vision of the geographical expert. In Canada, the public welcomed Taylor's national forecasting, which predicted favourable settlement opportunities in Canada's forbidding Shield country as far north as the Arctic Circle. There, however, Taylor's geographical outlook foundered upon the changing intellectual climate within the universities during the 1940s. Geographical determinism had fallen into disfavour in the United States by the late 1930s; moreover, after the war, there was a resurgence of the humanities at the University of Toronto. Innis, the prime mover behind Taylor's appointment, had promoted geography as the 'lynch pin' of the social sciences because of its intellectual moorings in the physical and biological sciences. Innis believed that geography would strengthen the social sciences by providing them with a sound scientific basis by linking them with the natural sciences.<sup>206</sup> But by the 1940s, as his interests turned towards philosophical questions, even Innis became sceptical of the claims of objectivity by the social sciences. Although Taylor insistently proclaimed himself a 'heterodox' scholar, it was this very strident individualism, which sought to flout many of the accepted political and intellectual norms, that ultimately pushed him towards the margins in both the Australian and Canadian milieux, just as the less well adapted plants, animals, and races were forced to the geographical extremes in Taylor's ecological world view.

206 Falconer Papers, A67-0007/135a, Innis to Cody, n.d.; Innis to Falconer, 14 October 1931. Innis particularly pressed for a Department of Geography which might function to revivify the social sciences at the University of Toronto since Innis believed that they had been crippled by the loss of R.M. MacIver and C.R. Fay from the Department of Political Economy during the late 1920s.